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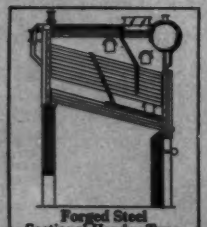
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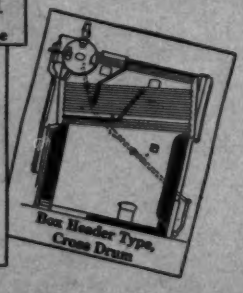
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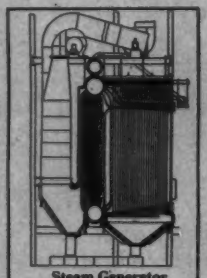
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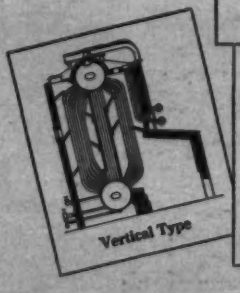
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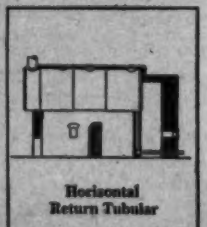
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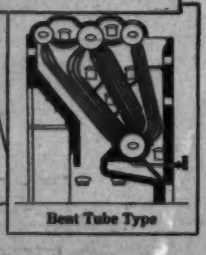
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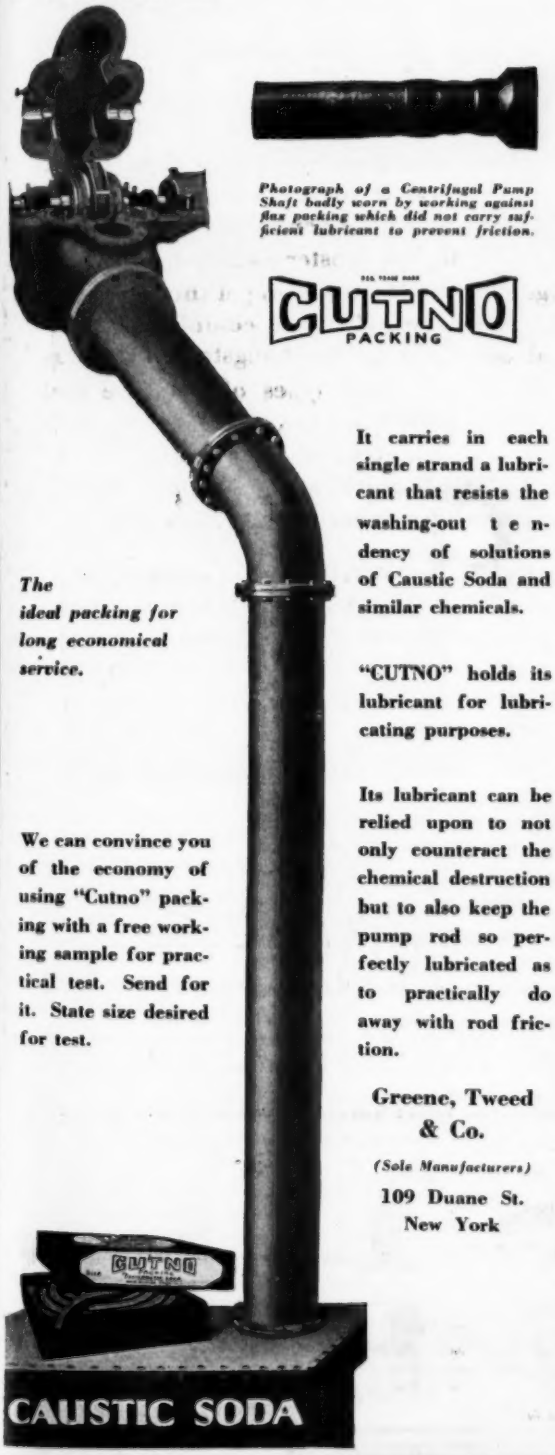

Photograph of a Centrifugal Pump Shaft badly worn by working against flax packing which did not carry sufficient lubricant to prevent friction.

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PAPER TRADE JOURNAL

ESTABLISHED 1872

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

FIFTY-SEVENTH YEAR

Published Every Thursday by the

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PAPER TRADE JOURNAL

With Which Is Combined

PAPER

Vol. LXXXVIII, No. 7 — Thursday, February 14, 1929

News Print Price Announcement Still Delayed

General Impression Is That Leading Executives Have Agreed Upon Price of Around $55 per Ton For Current Year—Some Difficulty Revolves Around Distribution of Orders and Recompense to Mills Which Will Have to Curtail Production—MacLaren Interests Plan New Mill At Buckingham Junction, Que.

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., February 11, 1929.—While it is generally accepted here that the news print executives have agreed upon a price around $55 a ton for news print during the current year, and while certain of these executives are quoted as giving reassuring statements in this respect, still another week has passed without a definite statement being made. The difficulty, it would appear, revolves around the distribution of orders and the question of recompense to those mills which will have to cut down on production despite the fact that they have contracts which would keep them running at or near capacity or contracts which figure at a higher price than the general one tentatively agreed upon. The delay in the announcement indicates that there is still a possibility of a slip between the cup and the lip, although in news print circles such an interpretation is frowned upon.

Premier Taschereau and the International

Meanwhile an interesting peek behind the scenes, indicating that Premier Taschereau has intimated to the president of the International Paper Company that he must act "with a Canadian spirit," has been afforded by a discussion in the Quebec Legislature. Aime Guertin, the Conservative member from Hull, where the E. B. Eddy Company's plant is situated, in referring to the news print situation, made the remark that the Hon. L. A. Taschereau had been obliged to get down on his knees to A. Graustein, president of the International Paper Company, to get favors, a statement which has been said before in the House this session in various forms, and brought contradiction.

Premier Taschereau asked Mr. Guertin what he meant by his remark, and what he knew of the situation.

"I rise to a point of order," said Hon. Athanase David, "A member of the House has no right to say that any other member has gone down on his knees to anyone to get favors."

The Premier said that he had not only not been on his knees to Mr. Graustein in the news print situation, but had told him that if he believed he was master of the situation here he was in error, and that he could never count upon the Government for anything if he would not act with a Canadian spirit in conjunction with others to solve the news print situation.

"I accept the statement of the Premier, but it is apparent that Mr. Graustein did not pay much heed to the Premier, since it was necessary for the Premier to go to New York to meet Mr. Graustein," said Mr. Guertin.

"I did not go to New York to meet Mr. Graustein," said Mr. Taschereau. "I went to Washington as the guest of the Hon. Vincent Massey, and then to New York to attend the Pilgrims' Dinner, and in New York I met Mr. Graustein, but not by appointment."

The Hon. Hector Laferte, Speaker, ruled that the words used by Guertin were of an insulting nature, and he should withdraw them. Mr. Guertin did so, and the incident was closed.

Another Big Mill Contracted For

Reference has been made in these columns several times to the news print mill being planned by the James MacLaren Lumber Company, of Buckingham, Que. That construction of this mill will go ahead immediately is shown by the following announcement in the *Ottawa Citizen*:

"The James MacLaren Lumber Company of Buckingham, Que., will build a 250 ton paper mill, and 75 ton sulphite mill, on its property at Buckingham Junction, to cost in the neighborhood of $6,000,000 and to furnish 500 men with employment.

"The contract for the construction of the big mill and its sulphite mill has been awarded to the Foundation Company of Montreal ,and preliminary work on it was started today.

"The MacLaren Company expects the mill to be completed by the late summer of 1930, but news print will not be manufactured until the fall of that year, as a result of an agreement entered into between the company and the Quebec Provincial Government, in view of the existing news print situation.

"Power for the two mills will be derived from the High Falls power development of the MacLaren Company, which is now under way and where an initial power supply of 90,000 h.p. will be generated, and provision has been made for the installation of another 30,000 h.p. unit when required."

Mersey Mill to Add Another Machine

The news print mill at Mersey, N. S., now under construction by the Mersey Paper Company, will undertake the addition of a third production unit which will raise the daily output of the mill from 250 tons to 375 tons. I. W. Killam, president of Royal Securities, and a party of officials of the Mersey Company, recently made a tour of the mill site and power development areas of the company.

"Both Colonel Jones (president and general manager of Mersey Paper) and myself see no reason why a third machine should not be installed comparatively soon after the completion of the second machine," were the words of Mr. Killman, according to a dispatch in the *Halifax Herald*.

The first machine of the Mersey Paper mill will be installed and in operation in October, 1929. The second machine will be in op-

(*Continued on page 82*)

Demand for Paper Spotty In Philadelphia

Although Trading Is Light at Present, Local Distributors Are Becoming More Optimistic With the Approach of Spring—Large Volume of Inquiries Are Being Received For Practically All Grades of Fine and Coarse Papers For Future Needs

[FROM OUR REGULAR CORRESPONDENT]

PHILADELPHIA, Pa., February 11, 1929.—While present demands are still spotty, there are brighter prospects looming for the near future as more attention is being given to preparation for spring business. This brighter outlook is due to the larger number of inquiries that are now being made for all grades of fine and wrapping papers. Few consumers, however, are stocking notable supplies at this time, being content to scout about for prices rather than to make commitments for immediate stocking.

Fine paper trading continues to hold to supplies for immediate consumption among smaller printing houses while wholesalers are reporting a fair volume of business for book papers in the unfinished grades. Writing papers are drifting along in a spotty market with occasional spurts of buying but no disturbances in quotations on any of the grades. A few of the grades in announcement stocks have been in fair demand with a broader consumption of cover papers and their combination fillers in corresponding or harmonizing shades that meet the requirements of up-to-date direct mail advertising. Large converters of bank notes, financial papers such as are used for stocks and certificates, and other engraved specialties and forms, have been well supplied by those houses catering to such trade. The several Philadelphia concerns with extensive plants are now operating at full speed with a lively need for these supplies.

Wrapping Papers In Fair Demand

Wrapping paper and specialties used by the clothing industries and mercantile trades are in fair demand. There is a broader need for krafts, boxes and fiber containers among mercantile enterprises as stocks are moved in cost inventory sales. There has been a reduction of $5 per ton on water finished butchers fibers. There also was some easing off in quotations on sulphite manilas. Building papers are giving evidence of revival of outdoor activities as supplies are being stocked for the coming springtime, with prices holding firmly. While wrapping paper shows signs of an upward demand, dealers are still competing for business. Mills are steady in their prices but dealers are willing to make concessions to land orders. Local disturbances in values are likely to prove only temporary. The twine market, too, is subjected to keen competitive bidding for orders, but the paper trade is not as involved in the competition as are manufacturers who have local mills, representatives and distributors featuring twines only.

Manufacturers Prepare For Broader Markets

As dealers look ahead to the prospective rise in prices, the mills are likewise preparing for coming spring needs and are now operating on wider scale. Though still confined to a cut schedule, the manufacturers are planning a 10 per cent increase in the present output of from 70 to 80 per cent with the coming month. Inquiries at the mills are more frequent and orders show broader demands. The board mills have been kept fully employed with considerable volume of orders on the cheaper grades garnered when the recent price warfare was under way. With efforts in Washington now being made to adjust the board industry and stabilize the market, prices are likely to improve.

Paper Stock Market More Active

With mills planning fuller schedule of operation, the manufacturers are now buying larger quantities of paper stock. Prices of the cheaper grades advanced $1 per ton in the week. Book papers and the cheaper grades of stock continue the most active and growing scarcity looms as all available supplies are taken up by manufacturers. There is no accumulation of any grades. Some of the local paper stock wholesalers have standing orders to buy up all the book paper stock that can be purchased. It is understood that a single mill has been a heavy bidder for book stock here and is giving $2 per ton higher than others for this grade in order to get sufficient stock in advance of its needs. The board mills have secured an enormous tonnage of cheaper grades of common stock to supply requirements for the volume of orders that were taken for the finished product during the recent board disturbances.

Graphic Arts Banquet

Announcement was made of the arrangements for the annual Graphic Arts Night, to be held by the allied industries, following the meeting of the joint associates of the Typothetae and the Philadelphia Paper Trade Association in the past week. The meeting of the trade associates at the Typothetae headquarters in the Public Ledger Building was given over to the setting of a date and the selection of the place. The Graphic Arts Night has been set for April 4 and will be staged at the Manufacturers Club instead of the Penn Athletic Club, where it has been held since its inception more than a decade ago. There will be an appointment of the various committees by William T. Innes, chairman of the banquet committee, shortly, which will provide for the participation of the paper men and others in the associated industries in the annual social gathering of the graphic arts trades.

Paper Trade Association Appoints Delegates

Delegates to represent the various divisions of the Paper Trade Association of Philadelphia at the coming annual convention of the national association were appointed when the local members met at the Bourse Restaurant last Wednesday. Those who will journey to New York to attend the convention on February 18 are Leon Beck, of the Beck Paper Company, delegate from the Fine Paper Division, and T. H. B. Smythe, of the J. L. N. Smythe Company, who will represent the Wrapping Paper Division. Vice President W. S. Wilcox, of the Wilcox, Walter, Furlong Paper Company, will be the official representative from the local organization. President Simon Walter, head of S. Walter, Inc., left last Friday for a three weeks' sojourn in Florida and will not be able to attend the annual gathering in New York.

Keasby & Mattison Co. Passes To Sole Ownership

With the purchase of the holdings of his associate in the business, Dr. Richard V. Mattison, president and general manager of the Keasby and Mattison Company, Ambler, near Philadelphia, became sole owner of the asbestos products and chemical manufacturing concern. He has bought the holdings of Henry G. Keasby, who has been affiliated with him in the business. The company has capital and surplus of $7,500,000. Dr. Mattison in making an announcement stated that he looked forward to an advancing market for his company's products and asbestos mill boards. Dr. Mattison in reporting the changes in the firm states asbestos in 1929 will have a stronger and possibly advancing market through the entire year for both crude and spinning fibers as reserve stocks become exhausted.

Local Mills Win Large Government Contracts

Pennsylvania paper manufacturers were heavy scorers in the awards of the U. S. Government contracts given on February 4 for $3,240,863 worth of paper to be used by the public printer during the year beginning March 1. To the P. H. Glatfelter Company, of Spring Grove, Pa., went seven contracts for 7,300,000 pounds at 5.12 and 5.32 cents per pound and a contract for 50,000 pounds at 6.99 cents per pound. The Atlantic Paper Company, 914 Walnut street, this city, was low bidder for 350,000 pounds of rag machine finish book paper at 8.79 cents per pound. The Jessup and Moore Company, with mills in Delaware and Philadelphia

headquarters in the Commercial Trust Building, won the contract for 1,400,000 pounds of mimeograph paper at 7.49 cents a pound. The Jessup and Moore Company was also low bidder for 120,000 pounds of white sulphite paper at 5.85 cents. The Atlantic Paper Company received the contract for 2,000 pounds of paper for embossing purposes at 8.21 cents per pound.

Wholesale Waste Merchants To Banquet

Members of the banquet committee appointed to arrange for the annual dinner and social session of the Philadelphia Wholesale Waste Merchants Association, have set the date for March 5 and the Hotel Lorraine as the place for the yearly meeting of the dealers and their invited guests from other branches of the industry. Arrangements have been completed and will include besides the dinner a vaudeville program of high class talent. Those on the committee are William Simmons, Jr., William J. McGarity, Jr., and George French.

Fancy Paper Exhibit at Gift and Art Show

Dealers in fancy social stationery and papers and announcement stocks will be included among the exhibitors who are to display the 1929 line of gift paper goods at the Third New York National Show of the Gift and Art Association during the week of March 11 to 16 at the Imperial Hotel. The lines will include fancy wrapping paper for gift wares in imported lines, social stationery in imported bulk papers, announcements and portfolios and card papeteries. Among them French, German, English and Japanese papers will be shown. These will supplement American fine stationery. The New York Show will supplement the Philadelphia Show, to be staged at the Adelphia Hotel, February 20.

Paper Trade To Attend Typothetate Meeting

Paper manufacturers and dealers will join in the Spring meeting of the Third and Fourth Typothetae Districts to be held April 26 and 27, at the Hotel Washington, Washington, D. C. The main topic under discussion by various speakers on the program now in course of preparation will be production, with prominent paper trade associates and printing authorities on the speakers list. A trip through the Government Printing Office and the Bureau of Engraving, and other sight seeing trips, will be included in the program. The Third District Typothetae takes in New Jersey and Eastern Pennsylvania, to the exclusion of Pittsburgh, while the Fourth District includes all of Delaware, Maryland, Virginia and North Carolina.

Philip Sellers Dies From Injuries

Following the automobile crash which resulted in his confinement to a hospital since last week, Philip Sellers, vice president and general manager of the Keystone Paper Products Company, with plant in Wolfe street and headquarters at 26 South 15th street, died on Sunday, from injuries received. Mr. Sellers, who was 53 years of age, was on his way from his home at 320 North Chester Road, early in the morning on February 2, to the Keystone plant, when his car was involved in the collision at Broad street and Oregon avenue, which resulted in the death of two of the occupants of the automobiles and injuries to five others. After the accident Mr. Sellers was taken to the Methodist Hospital where he remained in an unconscious condition for a week and until his death. He came to Philadelphia two years ago to join the Keystone Paper Products Company, of which his brother, Richard Sellers, is president. He formerly was a civil engineer. He was a brother-in-law of Sylvester S. Garrett, one of the prominent members of the Philadelphia paper industry, and descendant of pioneer paper manufacturers of Pennsylvania. Surviving him besides his wife, Mrs. Susanna Garrett Sellers, is one daughter, recently graduated from college, Miss Florence Sellers.

Cole Paper Mills Incorporate

MONTPELIER, Vt., January 4, 1929.—Articles of association have been filed in the Secretary of State's office by the Cole Paper Mills, Inc., to manufacture paper, paper bags and other paper products at Brattleboro, with a capital of $50,000. The incorporators, all Brattleboro residents, are A. F. Schwenk, Beatrice J. Brown and Donald G. Harrington.

Taggart Bros. to Open Bag Plant

CARTHAGE, N. Y., February 4, 1929.—Construction of the new paper bag plant of Taggart Brothers Company in West Carthage has been completed and operations will be under way some time this month. The new factory has been under construction for the past five months and adjoins the property of the Champion Paper Corporation. Full production will not be reached for several weeks, according to company officials. The paper required in the manufacture of bags will be obtained from the Champion mill which for several years past has been turning out catalogue papers and news print. It is expected that the plant will employ about 175 persons and the daily output will be about 200,000 bags. The new plant is built of structural steel frame with reinforced concrete and brick walls.

The factory was built from designs prepared by the engineers of the St. Regis Paper Company and the construction carried out under the supervision of Charles Felding, an official of the Power Corporation. The main floor of the structure is 220 feet long and 100 feet wide. The basement section will be used mainly for storage purposes. The main part of the building has been designed so as to insure exceptionally good light and the comfort of operators has been well taken care of by providing modern sanitary arrangements and rest rooms. A first aid room is also a feature of the new building where an attendant will be on duty during working hours. Equipment is now being installed and will consist of four tubers, sixteen stitchers and sixteen valvers together with the necessary printing presses and conveying equipment. The plant will be operated under the management of D. A. Fleischmann, of the Taggart Company.

Zellerbach Plans Public Financing

PORTLAND, Ore., February 1, 1929.—Reports are current that public financing will be undertaken by the Crown-Zellerbach Corporation. The purpose of the plan is said to be to capitalize the cost of the Port Townsend development which has been temporarily financed out of earnings and current borrowings.

The new financing, it is understood, will probably be in the form of convertible preferred stock issue, as much of the financing of this corporation has been in this form. The last two issues of convertible preferred stock publicly offered were marketed in 1926 and 1927 at under 100 and subsequently sold as high as 140.

The units of the Port Townsend development have just been completed and are expected to contribute largely toward earnings of the corporation during the coming year. The first unit has a daily production of about 100 tons of kraft liner board and the entire output has been sold under 20 year contract to Fibreboard Products, Inc. The second unit has about the same daily production. The entire output of the second unit has been sold under contract to the Bates Valve Bag Corporation.

Chesapeake Corp. Elects Officers

At the annual meeting of the stockholders of the Chesapeake Corporation, held recently in Richmond, Va., the following officers and directors were elected for the present year:

President, Elis Olsson; vice-president, H. W. Ellerson; treasurer, J. Scott Parrish; secretary, W. C. Gouldman; directors, all of the above and Julian H. Hill and T. Croxton Gordon.

The meeting was well attended, a large majority of the stock being represented either in person or by proxy and the reports submitted by the officers covering last year's operations of the mills were very satisfactory, notwithstanding the general unsatisfactory situation in the industry.

Among other improvements contemplated by the corporation for the present year is the erection of a modern office building costing approximately $40,000 and the installation of additional equipment in the sulphate mill costing approximately $300,000, which last mentioned expenditure will materially increase the kraft pulp production.

Ontario Paper Mills On Satisfactory Basis

Manufacturers Report Gradually Increasing Tonnages In Practically All Departments—Book Paper Plants Lead Fine Paper Group With Orders Well Into Summer Months—Other Grades Well Booked Ahead—Outlook For Coating Mills Improves

[FROM OUR REGULAR CORRESPONDENT]

TORONTO, February 11, 1929.—Enquiry among the paper wholesalers in Toronto and other Ontario centers reveals a fair amount of business passing in practically every class of paper. In most departments the year has opened well and while January was somewhat quiet, it saw the inventory period well over which meant that consuming sources were again in the market for depleted supplies. So it is that February is opening up well with a good demand for paper lines generally and a satisfactory volume of sales. Business in the fine paper section is slightly better than the coarse paper department, although there is a fair movement in wrapping and paper bags, with a disposition to buy in larger quantities than at the close of the old year, and a cheerful outlook for future business. Many of the wholesalers, although they have their own organization in the Canadian Paper Trade Association, took advantage of the opportunity to meet the mill men at the convention of the Canadian Pulp and Paper Association in Montreal and in the numerous conferences held among themselves and with the manufacturers the impression was gleaned that the present year gave every promise of yielding really good business to the paper merchant. This has already set in and it is believed that from now on sales will gradually increase until well on in April or May when there will be the usual summer falling off. In the meantime optimism is the key note of the trade, with individual firms preparing for a still bigger year than they experienced in 1928.

Paper manufacturing operations are proceeding on a satisfactory basis, with gradually increasing tonnages in all departments. As usual, the book paper mills pretty much lead the fine paper group. They are busy on orders that will carry them well into the spring and summer months. Bond, ledger and writing machines are all busy and have a fair amount of business booked ahead, while the coated paper plants are still feeling the seasonal quiet condition—less pronounced than last year—but existing nevertheless to some extent. There are signs of better business for the coating mills just around the corner but in the meantime they have to be content with a fair amount of trade until the demand for coated stock picks up, which should be soon. There is real activity in waxing, glassine and grease proof, with a steady demand for these lines, while manufacturers of light weight papers declare that the year so far has yielded more business than they looked for. There is an excellent call for tissues, toilets and other light weight paper lines, specialty papers in this class, particularly, selling well under ever-increasing uses to which tissue papers are now being put. Board mills are all busy and some of them are finding difficulty in filling orders promptly—and this despite the fact that several new mills have recently come into production. There is also considerable competition to meet in the way of importations. These conditions, however, are not materially affecting the activities of the Canadian board plants, whose output is being readily absorbed. This means that the paper box industry is operating on a satisfactory basis, with large requisitions for stock now that the inventory season is over and the period entered upon where stock has to be made up for the spring months. Manufacturing stationers report a fair demand for stationery and allied lines and there is a good demand for waste paper and rags, with prices quite firm in these lines.

To Conserve Pulpwood Supply

The announcement in the speech from the throne at the opening of the Ontario Legislature of a proposed measure to further conserve pulpwood resources of the Province is in line with the statement made regarding the news print situation before the annual meeting of the Canadian Pulp and Paper Association by the Ontario Minister of Lands and Forests. Like other provincial representatives who were heard at the annual dinner, the Hon. Mr. Finlayson intimated that their responsibility in the present crisis ended with the calling of the conferences of manufacturers and that the solution of the problem lay with the latter. However, like the Hon. Mr. Perron, who spoke for Premier Taschereau of Quebec, he did indicate that the Provincial Governments assumed a responsibility for the perpetuation of the supply of raw materials for the mills and that they proposed to insure this supply. The legislative proposals to be introduced in Ontario will therefore be awaited with considerable interest. So far as Quebec is concerned, Mr. Perron intimated that further restrictions on the export of pulpwood would be favored. Further, he expressed the view that if such restrictions injured the markets for the products of the small wood lot owners then the Government should consider some method of insuring a fair price to protect such pulpwood farmers.

Changes in Howard Smith Staff

It was announced in Toronto a few days ago that Arthur H. Hobson, who for some years has been connected with the sales staff of the Howard Smith Paper Mills, Ltd. in Toronto, had been appointed assistant sales manager of the company, with headquarters in the Royal Bank Building in that city. Mr. Hobson, who is one of the most popular paper salesmen in Ontario, broke into the paper game with the old Toronto Paper Manufacturing Company, under Charles F. Mansell, dean of the Toronto paper trade, in 1911, and served with the company until it was taken over by the Howard Smith Paper Mills, Ltd., in 1919, just after Mr. Hobson had returned from overseas with the Canadian forces in the Great War. He will look after the firm's Ontario business as assistant to George Davidson, sales manager of the company at Montreal. R. B. Hall, the former Toronto office manager, has been appointed sales manager of the Canadian Paper Company, which is operated by the Howard Smith Company, and which organization is opening offices in both Toronto and Montreal. Mr. Hall will have his headquarters in the Toronto office. Another appointment to the Toronto office of the Howard Smith Paper Mills, Ltd., is that of F. G. Hunt, who was formerly with the Alliance Paper Mills, Ltd., a Howard Smith associated company.

F. W. Halls Heads C. P. T. Association

The election of Fred W. Halls, of the Fred W. Halls Paper Company, Ltd., Toronto, to the presidency of the Canadian Paper Trade Association, at the annual meeting of that organization in Montreal, was the source of a good deal of satisfaction in wholesale paper circles in Ontario. Mr. Halls is head of one of the largest paper distributing houses in the Province and is popular in all branches of the paper trade. Associated with him on the executive of the association are John Martin, of Winnipeg, who is honorary president; Frederick Smith, of Smith, Davidson & Wright, Vancouver, who is first vice-president; L. P. Turgeon, of Quebec City, second vice-president; T. J. Macabe, of the Buntin Reid Company, Ltd., Toronto, treasurer; N. L. Martin, honorary secretary, and Ivan Moffitt, secretary. At the business sessions of the organization an optimistic view of the paper trade situation throughout the Dominion was taken by all the delegates and for the most part they reported a fairly prosperous past year. Various matters pertaining to greater co-operation and efficiency on the part of the members of the association and economic plans for the future were discussed at the meeting, which was presided over by Past President J. B. Brown. Two pleasant incidents featured the

gathering. One was the presentation to the association by the John F. Ellis estate of a beautiful framed picture of the late John F. Ellis, the first president of the Canadian Paper Trade Association, and for years the dean of the paper trade in Ontario, the gift being received by Mr. Graham and Mr. McFarlane. To N. L. Martin, who was the first secretary of the organization, and to whom is credited much of its successful operation, was presented a fine hunting gun and case.

Corrugated Paper Box To Issue Report

The annual general meeting of the Corrugated Paper Box Company, Ltd., is to be held within the course of the next few weeks, when it is proposed to issue a financial statement covering the past nine months—that is, since the organization of the new concern. This proceedure is being adopted in order that the fiscal year of the company may in future end with the calendar year. Earnings are reported as being the best year in the company's history and it is stated that an equally satisfactory position obtains in regard to the Winnipeg subsidiary, known as Hilton Brothers, Ltd. From present indications it would appear that earnings of the new company in its first year of operations are running at the rate of approximately $2.50 per share of common stock outstanding. Both the plant on Geary avenue in Toronto and that at Winnipeg are operating at full time just now, which constitutes a record in the annals of the company for January production. Orders on hand are also reported to be sufficient to maintain full production for some time ahead.

Appeal in Noted News Print Case

An echo of war conditions was heard before the Second Divisional Court in Toronto last week on an appeal by the Fort Frances Pulp and Paper Company against the decision of Justice Grant dismissing a claim against the Spanish River Pulp and Paper Company and other news print manufacturers for an adjustment of the price of news print supplied by the Fort Frances mill under an order of the paper controller. Before argument opened Justice Orde said: "I was interested throughout the whole period of paper control on behalf of the E. B. Eddy Company. The Eddy Company was a party to these proceedings and have since dropped out. Unless some one raises an objection, I see no reason why I should not sit under these circumstances." No objection was raised. It was stated by W. N. Tilley, who outlined the case, that Justice Grant had held that while in his view there was something unfair to the plaintiff, the plaintiff had not shown any common law right, or any order of the paper controller giving him any claim against the defendants. During the period of paper control, the Fort Frances Company, at Fort Frances, Ont., had been called upon to serve the Western Canadian newspaper publishers and relieve the eastern mills of paper they would have had to supply. Geography entered partly into the difficulty, because being nearer to the western publishers than the eastern mills, the difference in freight rate was about $12 a ton. Under news print control the publishers had to take the news print at the mill and pay freight to destination. It was not possible, Mr. Tilley continued, at $12 a ton to give western publishers a rateable division of supply among all the mills. Some manufacturers supplied more than their pro rata share to Canadian publishers and others of necessity supplied less. Those who supplied more lost money because it would be shown that higher prices would have been obtained had the news print been sold in the United States. The trouble rose from March 1 to December 31, 1917. But in 1918 and 1919 the control continued and there was some doubt about the validity of the order after the armistice. It was realized that there would have to be some adjustment by way of pooling production. The amount of production required for Canada was about 13 per cent. The balance went to the United States, and if distances had all been the same the simple solution would be to say to all the mills, hold 13 per cent of your production for the Canadian market. Another point raised by Mr. Tilley was that there was only limited control in the United States. The Fort Frances mill was under contract to sell its products in the United States and naturally wanted the open market. Argument lasted several days and judgment was reserved.

Probe Sale of Limits by Tender

The Ontario Government's system of selling pulp and timber limits in the Province and the number of acres sold by the Department of Lands and Forests under the direction of the Hon. William Finlayson, will come before the Ontario Legislature in the near future as a result of a resolution brought before the House by the member for North Bruse a few days ago. As a result of information secured by this means last year some surprising data which led to the condemnation of the Government's policy by the Opposition members of the House was uncovered. It is probable that another attack will be made on the Government for their attitude in these matters by Liberal members of this session. Last year, the Liberal Leader declared that he was not satisfied with conditions and promised that he would bring the matter before the House for further investigation this season. This is the first move on his part. It was found last year that in the majority of the cases where timber limits were sold only one tender had been received. The Opposition declared that this was the case where the Government had let it be known that no other company's bid would be considered and that the limits were not actually sold by tender but by the will of the Government.

Abitibi, A Monthly Magazine

With the issue of January 29, the Broke Hustler, the house organ put out by the Abitibi Power and Paper Company at Iroquois Falls, Ont., ceased as a newspaper, to be replaced by "Abitibi," a monthly magazine. The company states that the change was necessitated by the great expansion of the concern which now owns and operates nine mills: at Iroquois Falls, Smooth Rock Falls, Sturgeon Falls, Espanola, Sault Ste. Marie, Fort William, in Ontario; Pine Falls in Manitoba, and Beaupre and Murray Bay in Quebec. Alexander Dewar will continue as editor of the magazine.

Notes and Jottings of the Trade

Ivan Moffitt has moved his office from the York Building, Toronto, to Room 830, Commerce and Transportation Building, Bay street, which is also the office of the Canadian Paper Trade Association, of which Mr. Moffitt is secretary.

George Davidson, sales manager of the Howard Smith Paper Mills, Ltd., with headquarters at Montreal, was a business visitor in Toronto last week.

William Ashcroft, an employee of the International Paper Company, died in hospital at Mattawa, Ont., following an accident at the mill when his leg was caught in the gears of a bleaching machine. Despite the efforts of a gang of men armed with acetylene torches who cut through gears and shafts to release him, and the chartering of a special train to rush him to the hospital, the shock proved much too severe and he passed away in a few hours.

Charles H. J. Clause, sales manager of the C. R. Whiting Co., Inc., Newark, N. J., and G. D. Falkenberg, of Price Bros., Ltd., Quebec, were callers on a section of the paper trade in Toronto this week.

Work has been started by a contracting company on interior reconstruction of the Buntin Reid Company building on Colborne street, Toronto which was recently very badly gutetd by a disastrous fire.

The office of the Ontario Pulp and Paper Makers' Safety Association, which for some years has been on the eighth floor of the Federal Building, Richmond street, Toronto, has been moved to 509 in the same building.

William MacT. Orr, proprietor of the Richmond Paper Company, Halifax, N. S., was a caller at the Toronto office of the Interlake Tissue Mills, Ltd., a few days ago.

New Interlake Digester Plant Now Operating

Change Over Made Successfully Last Week and Output of Mitscherlich Sulphite Has Been Proceeding At About 60 Per Cent of Capacity—Company Plans to Bring Plant Up to Full Capacity of 90 Tons Daily—Plant Houses Nine Digesters

[FROM OUR REGULAR CORRESPONDENT]

APPLETON, Wis., February 11, 1929.—Operations have finally been started in the large new digester plant of the Interlake Pulp and Paper Company, of Appleton, Wis., a subsidiary of the Consolidated Water Power and Paper Company. The change over was made successfully last week, and the production of Mitscherlich sulphite has been going on at the rate of about 60 per cent of capacity.

It is the plan of the company to bring the plant immediately up to its full capacity of 90 tons daily, according to C. K. Boyer, manager of the Interlake. It is said that this plant is the largest of its kind in the world. It was built at a cost of $450,000, and houses nine large digesters. The pulp is cooked by means of copper coils within the vats instead of direct steam application. In appearance the plant is one of the most artistic in the paper industry, since considerable attention was given to its outside architectural features and it resembles a public building.

Consolidated Directors Re-Elected

No changes were made in the directing personnel of the Consolidated Water Power and Paper Company, of Wisconsin Rapids, Wis., at the annual meeting of stockholders held recently. The directors were re-elected including George W. Mead, president; R. L. Krause, vice president; Theodore W. Brazeau, E. B. Redford, secretary; Stanton W. Mead, treasurer; William A. Fowler and Frank P. Hixon. The report of Mr. Mead as president reviewed the recent sale of its Canadian subsidiary, the Thunder Bay Paper Company, to the Mead-Abitibi interests. The business of the company during the last year was very gratifying and satisfactory, with good prospects for the season ahead. Quite a large number of stockholders was present and a social gathering was held after the meeting.

The annual meeting of the Thdawagam Paper Products Company, of Wisconsin Rapids, was also held the same day. The company had a satisfactory year during 1928, and will continue to run full time with a full crew. Officers and directors re-elected were: George W. Mead, president; Frank R. Walsh, vice president and general manager; C. K. Crouse, secretary and treasurer, and P. C. Daly and Walter L. Mead, directors.

News of the Industry

Wisconsin ranks fifth in the United States in the number of paper mills, according to the latest report of the United States Department of Commerce. There are 51 operating in the state. Of the 219 wood pulp institutions, Wisconsin has 33.

There was an attendance of 275 at the first session last week of the annual safety school at Appleton, Wis., including foremen, superintendents, supervisors and members of safety committees of paper mills and other industries. Isaiah Gordon, of the Chicago Bureau of Safety, was the speaker. He pictured the beginning of the safety movement in 1907 at New Albany, Ind., and the results over the years in cutting down the number of accidents. Sectional meetings were also held at which problems of each industry were taken up.

Three courses are being offered in a series of pulp and paper making classes opening last week at Wausau, Wis., in co-operation with the vocational school there. One group is being taught the manufacture of sulphite pulp, another is studying the Fourdrinier machine, and a third is learning about paper grades and testing. The object is to induce workmen of one department to study what is done in another part of the plant with the product, so that his understanding of his work is relative with the entire industry. Harold Skinner, F. L. Zellars, and Allen Abrams are the instructors.

Pulp supplies of the former Peshtigo Paper Company, of Peshtigo, Wis., are to be sold at 76 per cent of their book value, according to an order issued by the court under the receivership. Action was brought by two of the banks involved in the bankruptcy, and if no objections are filed in court, disposal will be conducted that way. The mills and equipment were sold last month at a receiver's auction to a new corporation known as the Badger Paper Mills, Inc.

Developments are evident in the attempt of paper mills of the Fox River Valley to obtain better freight rates to the southwestern territory. An examiner indicates in his report that the rates from Chicago to that part of the southwestern territory lying east of the Neosha-Laredo line will be 9 cents on first class freight under the rate from Milwaukee. Valley mills have a jump of 20 to 30 cents over the Milwaukee territory, and a reduction to 9 cents will be welcomed. As most of the freight is fifth class, the increase will be only about two cents a hundred pounds. Action was brought because of preferential rates held by mills in other territories, defeating the development of these markets by Valley mills.

Wisconsin's new forest crop law, which cuts down to ten cents an acre the annual taxes on tree growing lands, is constitutional, according to a decision just issued by the attorney general's office. This assurance gives paper mills and others free rein in their reforestation plans, which are assuming large proportions. Attempts are being made at the present session of the Wisconsin legislature to reduce the tax even below ten cents, but it is believed no change will be made.

A total of $46,316.57 was expended by the Mutual Benefit Association of the Kimberly-Clark Corporation, Neenah, Wis., during the year 1928. Most of this money went to employees for sickness and accident benefits, and for medical and surgical treatment. The fees received during the year from employees totalled $41,411.14, and the association has an estimated net surplus of $19,338.57.

Cheques of five dollars each were paid recently to 102 employees of the Badger-Globe mill of the Kimberly-Clark Corporation because of their safety record. The mill was operated for a long period without a lost time accident, thus bringing the customary reward from the company.

Several promotions have been announced by the Kimberly-Clark Corporation, Neenah, Wis. Henry G. Boon, manager of the mill at Kimberly, Wis., has been made technical staff superintendent of all the mills. His place at Kimberly is now filled by Joseph T. Doerfler, former electrical superintendent. William Kellett, manager of the Neenah group of mills, likewise has been made a member of the technical staff and will be succeeded in his former post by Fred W. VanLiew. The latter was superintendent of the converting department at Neenah. William Mehring, who has been employed by the corporation for 41 years, has retired, and is now in charge of the heating equipment of Lawrence college, Appleton, Wis. He was a millwright of the Kimberly, Wis., mill, in charge of boiler maintenance.

A fatal accident occurred last week at the Menasha Products Company, Menasha, Wis., when the roof over a loading platform collapsed under the weight of ice and snow and instantly killed Otto Houlihan. He was on the platform at the time preparing a car for shipment. Workmen at the time were removing snow from another part of the roof.

Frank E. Holbrook, formerly manager of the Combined Locks

Paper Company, Appleton, Wis., has become associated with the Oxford-Miami Paper Company, of Dayton, Ohio. After leaving Appleton he became an executive of the International Paper Company at Fort Edwards, N. Y.

Products of the Marathon Paper Mills Company, Rothschild, Wis., will be exhibited aboard the Wisconsin good will train which is scheduled to travel through the southern states soon. One car has been chartered for this purpose and will contain extensive exhibits.

Announcement is made of the marriage of Edward T. Gambsky, sales manager of the Fox River Paper Company, Appleton, Wis., and Miss Letta Fieweger, of Kimberly, Wis. They are on a honeymoon trip to New Orleans and Cuba.

New Hercules Jordan Agency

The Gibbs-Brower Company, Inc., 261 Broadway, New York, has taken over the entire Eastern territory of the United States for the Hermann Manufacturing Company of Lancaster, Ohio, manufacturers of the Claflin Refining Engine and the new "Hercules" Jordan.

Mr. Hermann, Senior, president of the company, has been in the automobile tire manufacturing business in Columbus, Ohio, for many years and has made rubber and tire machinery in his factory at Lancaster, Ohio. He has also made there for some twenty or more years, the well known Claflin refining engine, which is used extensively in paper mills for the rougher refining of raw stock.

A little over a year ago Mr. Hermann's son-in-law, H. N. Booker, a graduate engineer of the Ohio State University, took an active interest in the company as vice-president and general manager. Mr. Booker at once realized the opportunity which presented itself in building an up-to-date Jordan along the lines of the good old reliable Claflin, with improved features of manufacture and construction. With this in view, Mr. Booker designed and produced the new Hercules Timken Bearing Jordan, and has succeeded in placing on the market an engine which combines standardized Jordan efficiency, more and better stock, with power and filling economy.

The first Hercules Jordans were installed in the plant of the Chillicothe Paper Company of Chillicothe, Ohio, and subsequent installations have been made in other mills in the middle West, among the most recent, an order for eleven Hercules Jordans from the Chesapeake Paper Board Company, of Baltimore, and its associate plant of the Marley Paper Manufacturing Company, of Childs, Md. The Standard Paper Manufacturing Company, of Richmond, Va., also recently put in a new Hercules, and several have been sold to Canadian mills.

All of these new Hercules Jordans are giving the most satisfactory account of themselves.

The Hermann Manufacturing Company is represented in Canada by Waterous, Limited, of Brantford, Ontario, Canada; and by A. H. Cox & Co., Inc., of 1757 First Avenue South, Seattle, Wash., on the Pacific Coast. The Middle West they will handle from their home office at Lancaster, and Mr. Hermann, Jr., will have charge of the sales in this territory.

To Go With Holljngsworth & Whitney Co.

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., February 11, 1929.—Frank B. Cummings, who is well known in the paper trade, is to become associated with the Hollingsworth & Whitney Company, on March 1. Mr. Cummings was formerly president of the Bay State Paper Company, and the Boston branch manager some 20 years ago. When the name was changed to the Whitaker Paper Company about 16 years ago he became a director of the concern, remaining until September, 1919. At that time he became president and director of Storrs & Bement Company, and continued with the company until April, 1926. In 1927 and part of 1928 he was director of the Massachusetts Bureau of Animal Industry, appointed by Governor Fuller.

Gummed Products Co. Gets Certificate

The Gummed Products Company of Troy, Ohio, has been granted a certificate from the Daniel Guggenheim Foundation for the Promotion of Aeronautics signed by Col. Charles A. Lindbergh for having completed the work of identification of its buildings for the service of aerial navigation thus contributing to the establishment of a nation-wide system of transportation by air.

The wisdom of having airplane signals painted on the roofs of buildings in cities was demonstrated in Troy recently when the sign on the Gummed Products building enabled an aviator to locate the Waco field just in time to escape the heavy storm which bore down on the city.

Arthur Davis, a Waco owner from Lansing, Mich., and a passenger were flying from Nashville, Tenn., to their home. They

battled the oncoming storm for several hours and when over Troy realized they could not escape without landing.

Circling the city in search of a landing place they saw the name of "Troy" on the roof of the Gummed Products building with an arrow pointing towards the Waco field. In a few minutes they located the field and landed just in time to escape the storm.

Mr. Davis stated that but for the sign the storm would have caught them in the air and resulted in a forced landing with a possible wreck and injury.

To Discuss Industrial Conditions

[FROM OUR REGULAR CORRESPONDENT]

UTICA, N. Y., February 11, 1929.—Industrial conditions in New York State will be discussed at a statewide economic conference which will be held in New York City early in April, according to an announcement just made by Merwin K. Hart, of this city, and James W. Gerard, former ambassador to Germany. Messrs. Hart and Gerard, two of the members of the State Industrial Survey Commission, stated in announcing the meeting that the commission has detected a relative slacking of industry in the state in comparison with other states and although there is ample labor and capital it is claimed that in certain respects the state has not maintained its leadership. The following prominent men have accepted invitations to serve on a committee which will promote the congress: William H. Booth, president of the Merchants' Association; L. F. Loree, president of the New York Chamber of Commerce; Magnus W. Alex, president National Industrial Conference Board; Chancellor Elmer E. Brown, of New York University; Miss Frances Perkins, State Industrial Commissioner; Michael H. Cahill, president Mohawk-Hudson Power Corporation; Maxwell S. Wheeler, president Associated Industries of New York State; J. T. Loree, vice president Delaware & Hudson Railroad Corporation; William L. Hinds, vice president Crouse-Hinds Company; Henry K. Smith, president Art Metal Construction Company; Elon H. Hooker, president Hooker Electro-Chemical Company.

Brighter Outlook for Paper Trade in Chicago

Persistent Demand Experienced For Fine Papers, Book Papers, Wrapping Papers and Tissues —Volume of News Print Business Transacted Recently Practically Normal For Time of Year—Box Board Situation Fails to Show Improvement

[FROM OUR REGULAR CORRESPONDENT]

CHICAGO, Ill., February 9, 1929.—Market prices and general business conditions in Chicago seem to have taken a definite trend upward according to reports received this week. In most cases the increased volume of business has been offset by a continued narrow margin of profit but the volume has at least had the effect of making things look brighter.

Although there is still a great deal of rumor and counter rumor about the news print situation, news print representatives here report that the volume of business still remains practically at normal with production varying from 77 to 80 per cent. The first quarter of 1929 promises to prove fairly good for book papers, fine papers, wrapping papers and tissues. Prices are firm in all of these grades, according to reports, with the fine paper demand running strong enough in some instances to merit a report that a few mills are slightly behind in production.

The board market is having a good volume for the season of year but reports given out indicate that there is no improvement in the price situation with box board in particular selling at figures not far from the cost of raw materials, according to recent statements. As a result of this condition prices of waste paper in the lower grades are not strong but the higher grades of waste paper are reported as fairly active.

Paper Board Plan New Organization

Detailed reports of the recent meting of the Paperboard Industries Association held in Chicago January 23 and 24 have been sent out from the Chicago offices of the Association. Among the interesting announcements was that of a meeting called by the Department of Labor of the United States for paper board manufacturers on Tuesday, February 5, to discuss problems confronting that industry. Though no detailed accounts have been received it is understood that a number of manufacturers attended this important conference.

Central Plan Committee

Included in the various committee reports was that of the Central Plan Committee, of which J. B. Fenton is chairman. This committee, appointed in December, 1928, has for its purpose the formation of an organization and method of operation to function after the trade practice resolutions have been formally acted upon by the Federal Trade Commission. Letters have been sent out to manufacturers asking for suggestions regarding organization and some sentiment has been reported in favor of an organization headed by an individual of national prominence, the idea being based upon what the motion picture, rubber and other industries have done. Manufacturers are urged to send all suggestions regarding to organization and relative to the latter plan to Mr. Fenton, the Buffalo Box Factory, Buffalo.

Standing Committees Appointed

Standing committees appointed at the meeting to function until 1930 included the following chairmen: Sales Promotion Committee, J. M. Arndt, Robert Gaylord, Inc., Statistical Committee, Irving Randall, Chicago Label and Box Company, Chicago; Standardization Committee, R. H. Dollison, Fairmont Box Company, Fairmont, W. Va.; Trade Customs and Practices Committee, Burritt S. Hubbard, Ashtabula Corrugated Box Company, Ashtabula, Ohio.

The next meeting of the Paperboard Industries Association is scheduled for the Commodore Hotel, New York City, March 20 and 21. Meetings of the Executive Committee and the Standing Committee will be held in New York City, Tuesday, March 19.

A Unique House Organ

The most recent issue of the BookanWrap, published by the Pilcher-Hamilton-Daily Company takes on an appreciable amount of advertising value to its sponsors in addition to being filled with interesting editorial matter. Included is an actual specimen of Adwrap, a wrapping paper with considerable advertising value, together with a page given over to a selling talk on Adwrap plus a page giving names of typical Adwrap users. A business reply card, a new departure for the little house organ, is included and the responses should be good because of the method used. Editorially, John T. Daily writes an interesting story on "Raw Material from Which Twines are Made" and James H. Eaton has an article on "Testing Paper Intelligently." And on the back cover is a page advertisement featuring twine carried in stock by Pilcher-Hamilton-Daily. There is much to recommend this clever house organ which has grown in size and scope from the publishing of the very first issue. Advertising and editorial matter are mixed in a very pleasing fashion.

Salesmen to Attend Paper Convention

The Chicago Division of the Salesmens Association of the Paper Industry holds its final meeting before the annual meeting of the association at the time of the convention in New York on Monday, February 11, at the Hamilton Club. The meeting is to be in the nature of a farewell event for Ben Dabbit, of the Brown Company, who has decided to leave the paper business. It is expected that he will announce his plans for the future at the Monday luncheon. Mr. Dabbit, who has handled the pulp business of the Brown company for some time, is one of the most popular and enthusiastic members of the Chicago division. He has brought in a number of new members for the association, has worked hard in order that the functions of the association might be carried on in the best manner and his presence will undoubtedly be sorely missed from Chicago paper circles.

The Chicago members of the Salesmens Association are also completing plans for their usual special car or two to take them to the New York meetings next week. Under the direction and stimulus of Jim Coy, president of the national organization, a number of salesmen, mill men and representatives of paper lines, have signified their intention of riding in with the group. From present indications it looks as though the party would have a hilarious good time even surpassing the enjoyment and entertainment of previous trips.

News of the Trade

Mr. and Mrs. Joseph Joyce, of the Empire Paper Company, left Chicago early this week for an extended motor trip to Florida and choice spots along the Gulf Coast. A year ago Mr. Joyce was a member of the party sponsored by the Illinois Chamber of Commerce who cruised on the waters of the Caribbean Sea and to South American ports on a combined pleasure and good will tour.

Homer Ferguson, of the Champion Coated Paper Company, Hamilton, Ohio, was a visitor in Chicago two days of this week spending a part of his time inspecting the new Chicago offices of Champion on the eighteenth floor of the Conway Building.

J. B. Jones, of the Western Newspaper Union, Omaha, Neb., is expected in Chicago on Monday, November 11, en route to New York City and other Eastern points.

Boston Paper Market Continues Fairly Steady

Volume of Business Is Well Sustained and So Far This Year Is Greater Than In Corresponding Period of 1928—Lively Demand for Fine Papers Is Said to be Due to Exhaustion of Accumulations—Box Board Situation Practically Unchanged

[FROM OUR REGULAR CORRESPONDENT]

BOSTON, Mass., February 10, 1929.—The average condition of the paper market here is fair. Statements from wholesale dealers indicate that the volume of business as a whole is being sustained from week to week and is greater since the first of the year than the corresponding period in 1928.

The situation in fine papers generally is regarded as encouraging. The rather lively demand, of late, according to opinions expressed in the trade, naturally arises from the fact that the supply of stock on hand is becoming exhausted and new orders or probable new orders have made it necessary for users of fine paper to come into the market to cover for requirements. Good papers are moving rather well at fair prices.

Some of the dealers are complaining that the market is flooded with certain grades of coated book paper at what they regard as ridiculous prices, detrimental to the sale of high grade coated paper. They are stressing the point that if users of fine paper desire a first class job it would behoove them to stick to standard grades at fair prices rather than to use inferior grades, whose principal qualification is cheapness in price. It is claimed that the lower grades are not worth any more than the prices asked for them. The kraft market is fair as a whole, although lagging in some quarters.

Box Board Situation

The box board situation remains practically the same as that of a week ago. The quotation for chip board is sustained at $35 to $37.50 and that for filled news at $37.50 to $40. While conditions are somewhat improved over those prevailing recently, they are not exactly ideal, as many feel that higher prices would be more desirable. Large quantities of box board have been bought at the lower prices and business is hardly better than fair at the present time. Board for folding boxes is rather quiet.

It is felt by some that the recent meeting at Washington may have a good effect on the box board industry. Reports are that members of the Paperboard Industries Association, at their meeting, discussed unofficially the proposition to ask Secretary of Labor Davis to act as commissioner for the entire box board industry in this country, filling a role comparable to that of Judge Landis and Will Hays in baseball and moving pictures, respectively.

The market for old papers and rags is reported to be exceedingly quiet. While members of the trade note that there is not usually much activity immediately after the first of the year, the quietness does not ordinarily persist to the present period of the year. There are possibly a few exceptions in individual grades. Old newspapers show a little stronger tendency, as they are not so freely offered. They are now quotable at .65 to .67½, compared with a previous range of .60 to .65. While the prevailing quotation for No. 1 mixed paper is .50, it is understood that mills in Haverhill are paying .52½.

Protest Proposed Duty on Jute

The Ludlow Manufacturing Associates, Ludlow, Mass., and other large consumers of foreign jute, are making a vigorous protest against the proposed duty on that commodity. Members of the trade note that while similar attempts have been made with each change of administration, the sponsors of the proposed duty are more active this time. They have some assistance from the makers of paper bags interested in the placing of a duty on jute bags and jute products so as to make a better demand for bags used for Lyman cement. It is claimed that such a duty will work hardship for many and be a benefit for a few. Naturally those who use jute bags will be obliged to ask higher prices. As is known, paper bags are already used for plaster, lime and gypsum.

News of the Trade

A well-attended "get-together" meeting of the Fine Paper Division of the New England Paper Merchants was held at a luncheon at the Chamber of Commerce last Tuesday. President Arthur E. Ham, who was in the chair, impressed the importance of attending the meeting of the national association the week of February 18 on the part of all who were able to do so. It is expected that Boston will be well represented at this meeting by members from both the Fine and the Wrapping Paper Divisions.

A new line of high grade paper recently put on the market by Knight, Allen & Clark, No. 1 Sulphite Bond Watermark, made by the Crocker-McElwain Company, is meeting with such a favorable reception that a considerable volume of orders has been booked. Knight, Allen & Clark are carrying a complete line of the Crocker-McElwain products.

John Carter & Co. have become distributors for Thin Letterheads, made by the Esleeck Manufacturing Company, Turner's Falls, Mass. This grade of paper, of Fidelity Onion Skin, is a distinctive departure, substantial for the typewriter and showing beautiful results in printing, engraving, lithographing and letter processing. The weight is ten sheets to the ounce, desirable for air mail and export correspondence. The paper has a rugged, cockle finish and is of clean rag content.

The Arnold-Roberts Company is putting on the market a Salisbury Cover and Text, a new line, made by the Hampshire Paper Company, and Ravenna Cover and Text, made by Knowlton Bros. In the latter line the Text is new.

A cablegram has been received from George M. Graves, of the Geo. M. Graves Company, stating his safe arrival at Gottenburg, Sweden, February 4.

R. H. Spaulding, of the Spaulding Fibre Company, Milton, N. H., is in Florida for three weeks.

Walter Hadley to Manage Plant at Lynchburg

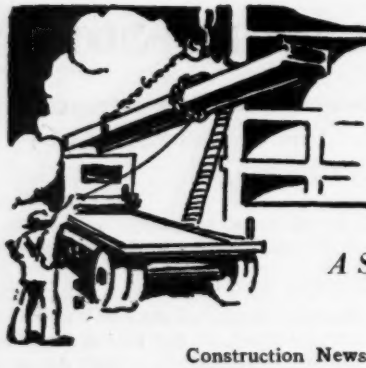
[FROM OUR REGULAR CORRESPONDENT]

DAYTON, Ohio, February 11, 1929.—Walter Hadley, assistant plant manager of the Gardner-Harvey Paper Company, Middletown, and who has been identified with that concern for 18 years, or longer, left Middletown Saturday for Lynchburg, Va., to accept a position as plant manager for the Mead Pulp and Paper Company.

Mr. Hadley began with the Gardner-Harvey Company when a young man and has progressed steadily in his work. He held a position of importance in sport circles during the past 10 years, having been associated with the management of the former Gardner-Harvey baseball team of the K-I-O League. This league included baseball teams from towns located in Kentucky, Indiana and Ohio. Later Hadley was with the Middletown team in the Central League and also served on the official board of the recently organized Central League, of which the Dayton club is now a member.

Mr. Hadley's connection with baseball was of prime importance to the paper mill forces which always have evidenced the keenest interest in sports, particularly the diamond pastime.

The Gardner-Harvey ball team held its place in the Industrial League, having such worthy opponents as the Champion Coated Paper Company, Beckett Paper Company and other concerns.



CONSTRUCTION NEWS

A Summary of Vital Facts Regarding Construction, Finances and Operation of Paper Mills

Construction News

Ilchester, Md.—Bids have been asked for construction work in connection with new plant of the Bartgis Brothers Company, Hamburg and Bush streets, Baltimore, Md., manufacturer of folding boxes and other paper products, at Ilchester, where former textile mill was recently taken over. Work will include alterations and extensions in structure, reported to cost more than $50,000. Company will concentrate production at the new location. E. H. Lupton is president. Fred L. Smith, 21 East Fortieth street, New York, is engineer.

Bellingham, Wash.—The Zellerbach Paper Company, Sacramento, Cal., is reported to have taken option on site at Bellingham, for proposed new pulp and paper mill, to consist of several units, estimated to cost upward of $2,000,000, with equipment. It is understood that the project is in a preliminary stage. The Crown-Zellerbach Corporation, affiliated, has purchased a tract of timber property in the Cape Flattery district, Wash., estimated to carry about 800,000,000 feet of standing timber, and will utilize as reserve raw material supply for its mills at Port Angeles and Port Townsend, to which the tract is quite accessible.

Monroe, La.—The Brown Paper Mill Company, Inc., West Monroe, has plans for a new addition to its mill, one-story, brick and concrete type, to be used for reclaiming waste products, reported to cost close to $100,000, with equipment. It is understood that work will be placed under way at an early date. George S. Holmes is general manager.

Chicago, Ill.—The Ansell Ticket Company, 730 North Franklin street, manufacturer of card board and paper specialties, will soon begin the erection of a new factory on Chicago avenue, near Mozart street, to be one and two-story and basement, 75 x 147 feet, reported to cost more than $80,000, with equipment. General contract has been let to the Regan Construction Company, 228 North La Salle street. Olsen & Urbain, last noted address, are architects.

Longview, Wash.—The Longview Fibre Company is arranging for a bond issue of $1,500,000, following the recording of a mortgage on the property to the First Wisconsin Trust Company, Milwaukee, Wis., and George B. Ruhman, of the same city, in amount of $5,000,000. The bond issue will be used in part for general financing and expansion in output.

Chicago, Ill.—The Lanzit Corrugated Box Company, 2509 West 22nd street, has plans nearing completion for extensions and improvements in proposed new plant at 24th and Rockwell streets, where existing property was lately acquired, to include a one-story top addition to existing structure and alterations in present building, entire project to cost more than $150,000. It is proposed to develop large increase in output at the new location. Bids will soon be asked on general contract. A. Epstein, 2001 West Pershing Road, is architect and engineer.

Chicago, Ill.—The Marvel Specialties Company, 2331 West Madison street, recently formed with capital of $20,000, is said to be arranging for early operation of a local factory for the manufacture of paper products. H. S. Waldstein is one of the incorporators.

Monroe, Mich.—The Consolidated Paper Company will soon have plans completed for a proposed new addition to its plant, to be used for storage and distributing service, estimated to cost approximately $160,000, with equipment. The unit will provide a storage capacity of 10,000 tons of paper stock, and will be maintained by the company as an adjunct for folding paper box department, to insure reserve supply at all times. F. F. Wernert, Nicholas Building, Toledo, Ohio, is architect.

Macon, Ga.—Plans are reported in progress by Mills Lane, president, the Citizens & Southern Bank, Macon, and associates, to interest one or more paper mills operating in Canada to locate plants in Georgia, utilizing native southern pine for raw material supply, converting into bleached sulphite pulp. It is said that suitable sites are under consideration for projected mills.

St. Louis, Mo.—The Hinde & Dauch Paper Company, Sandusky, Ohio, will begin excavations at once for proposed new corrugated paper products plant at 5110-38 Penrose avenue, St. Louis, and will proceed with superstructure at earliest possible date. New unit will be one-story, 80x465 feet, reported to cost close to $100,000, with equipment. A list of equipment to be installed has been arranged. Otto Randolph, Inc., 53 West Jackson Boulevard, Chicago, Ill., is in charge of erection.

Shelton, Wash.—The Rainier Pulp and Paper Company is carrying out an expansion and betterment program at its local mills, and will provide facilities for considerable increase in output. It is understood that additional equipment will be installed. An official estimate of cost of work has not been announced.

Harrisburg, Pa.—The Harrisburg Paper Box Company is maintaining production on full capacity schedule with regular working force and will hold to this output for an indefinite period. Increased orders are reported for heavy card board containers.

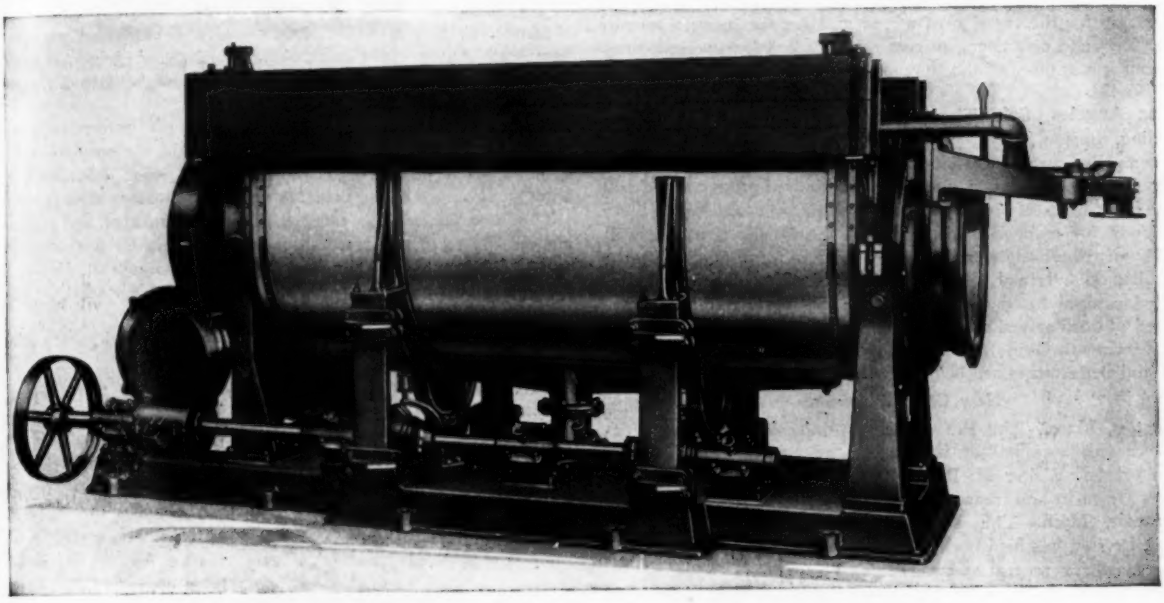
East Walpole, Mass.—Bird & Son, Inc., Washington street, manufacturer of roofing papers, etc., has active work in progress on a new addition to its plant, reported to cost approximately $40,000, and will have the unit ready for service at an early date.

Chicago, Ill.—Following the recent purchase of the Pioneer Paper Company, Los Angeles, Cal., to be operated as a Pacific Coast unit, the Flintkote Company, Park Square Building, Boston, Mass., has added to its holdings through the acquisition of the Sall Mountain Company, 140 South Dearborn street, Chicago, manufacturer of roofing papers and kindred products, and will consolidate with its organization. It is understood that the property will be taken over at once and increased operations arranged in that district.

Brooklyn, N. Y.—Officials of the Lily Cup Company, Inc., 168 39th street, Brooklyn, and the Tulip Cup Company, College Point, N. Y., are said to have organized a new company under the name of the Lily-Tulip Corporation, with capital of 250,000 shares of stock, no par value, Delaware laws, to take over and consolidate the two interests. The new company will continue plants at the present locations, it is understood, and will arrange for expansion in output of paper cuts and other paper containers.

Port Mellon, B. C.—The Vancouver Kraft Company, Ltd., Port Mellon, is said to have plans in progress for proposed ex-

Twenty odd thousand tons of paper pass through Bird Screens daily



The only paper screen that is built on the right principles---always has been---always will be.
The screen for *your* mill.

BIRD MACHINE COMPANY
South Walpole
Massachusetts

The BIRD SCREEN

2635

tensions in pulp and paper mills, and lumbering facilities. Work will include new production units at the Port Mellon plant, as well as new lumber mills and affiliated structures, entire program to cost close to $1,500,000, with machinery.

Vancouver, B. C.—According to an official report to the Bureau of Foreign and Domestic Commerce, Washington, D. C., a paper company at Vancouver has awarded a contract to a local contractor for the erection of a new mill for the manufacture of paper bags and containers, to cost about $100,000, with equipment. Information at office of the Bureau, Washington, reference Canada No. 298,433.

Los Angeles, Cal.—The Flintkote Company, Park Square Building, Boston, Mass., manufacturer of roofing products, etc., has completed negotiations for the purchase of the Pioneer Paper Company, Los Angeles, manufacturer of kindred products, and will consolidate with this organization. The Pioneer company will be developed for extensive operations on the Pacific Coast as well as for distribution of mulch paper and other products in the Hawaiian Islands and Orient. The purchasing company was recently acquired by the Royal-Dutch-Shell interests. Plants are located at Rutherford and Little Ferry, N. J.; Chicago Heights, Ill.; Cincinnati, Ohio; and New Orleans, La., and general expansion and betterments are being carried out.

New Companies, Etc.

Boston, Mass.—The Pratt Paper Company, has been incorporated with a capital of $100,000, to manufacture and deal in paper goods. Walter M. Pratt, 400 Commonwealth avenue, Boston, is president and treasurer, and will represent the company.

Detroit, Mich.—The Butler Paper Company, 851 Porter street, Detroit, has filed notice of increase in capital from $100,000 to $200,000, for general expansion.

New York, N. Y.—The Postissue Company, Inc., has been incorporated with a capital of $50,000, to manufacture and deal in tissue papers and kindred products. The incorporators are D. M. Putnam and Carl L. Stronach, 27 William street, New York.

New York, N. Y.—The Henry Paper Company, Inc., 142 West 38th street, has filed notice of increase in capital to $50,000, for general expansion.

Grand Rapids, Mich.—The Great Northern Board and Paper Company, Inc., 332 Powers Building, has been incorporated with capital of 400,000 shares of stock, no par value, to manufacture paper board products, boxes, etc. The incorporators are L. L. White, Edward M. Hill and James R. Wells.

Knoxville, Tenn.—The Knoxville Paper Box Company, East Magnolia street, has arranged for increase in capital from $50,000 to $100,000, for general expansion.

San Francisco, Cal.—The Crown Zellerbach Corporation, operating paper mills in Washington and other localities, is disposing of a stock issue to total about $5,700,000, a portion of proceeds to be used for general financing and expansion. I. Zellerbach is president.

New York, N. Y.—The N. & A. Paper Bag Company has been incorporated with a capital of $10,000, to manufacture and deal in paper bags and containers. B. V. Fink, 15 Park Row, is incorporator and representative.

Pawtucket, R. I.—The Metz Paper Company has been incorporated with a capital of $200,000, to manufacture and deal in paper goods. The incorporators are J. Rudolf, Warner P. and Conrad J. Metz, 34 McAloon street, Pawtucket; the last noted is company representative.

Kansas City, Mo.—The Dalton-Evans Company, Inc., has been formed by N. N. Dalton, 1009 West 57th Terrace, and associates, to manufacture and deal in paper products of various kinds.

New York, N. Y.—The Sunshine Folding Box Company, 405 East 4th street, has filed notice of dissolution under state laws. It is understood that company will be identified with the Park-Sunshine Folding Box Company, recently formed by local interests with a capital of $100,000.

Wilmington, Del.—The Safety Filler Corporation, care of the Corporation Trust Company of America, du Pont Building, Wilmington, has been incorporated under Delaware laws with capital of $300,000, to manufacture paper containers, fillers and other paper products.

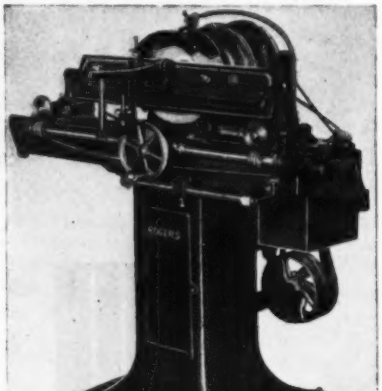
New Reversible Grinder

Samuel C. Rogers & Co., Buffalo, N. Y., have just put out a new Full Automatic Cup Wheel Grinder for grinding knives against the cutting edge—edge up. It can also be used for grinding knives away from the cutting edge.

This machine, known as Type "W," is of extremely simple construction. The base and column are cast in one piece, on which is mounted the bed, slide and knife table in which the main operating parts are enclosed, insuring protection against abrasive dust.

This new grinder has three longitudinal bearings for supporting the top to insure freedom from vibration and perfectly true knife edge grinding. The back bearing is an added feature in knife grinders and is provided with an adjustable steel gib 1 inch wide for taking up possible wear.

The miter gear, rack and pinions are cut from solid steel, eliminating noise and insuring long use. It also carries an extra large 10 inch cup wheel. The well known Rogers spring cross feed which prevents overheating of knives is retained on this grinder. Both longitudinal and cross feeding are full automatic, positive acting worms and gears being used in such a way as to stop the feeding at any desired point.



AUTOMATIC CUP WHEEL GRINDER

In grinding knives with the cutting edge up, the delicate edge is always in plain view of the operator, and, as is claimed by many, the heat generated by the contact of the grinding wheel with the knife is directed or carried toward the body of the knife and away from the thin, delicate cutting edge. This method of grinding knives is now preferred by many operators and no doubt has its advantages.

The travel of the table is at the rate of about 40 feet per minute and is adjustable to suit the length of the knife being ground. To make the machine still more rigid, supports for both ends of the bed are furnished for the 44 inch and 54 inch sizes. It is also made in three smaller sizes, 26 inches, 32 inches, and 38 inches. All sizes are equipped with a large 10 inch cup wheel which has a surface speed of about 3,300 feet per minute.

This new product of the Rogers Company is furnished with arbor mounted on ball bearings or sleeve bearings and also with 1 hp. General Electric built in motor, starter, etc. It contains all other up to date features such as water attachment with pump, stop cock, etc., for regulating the flow of water to the grinding contact, index for gauging the degree of bevel of the knives, etc.

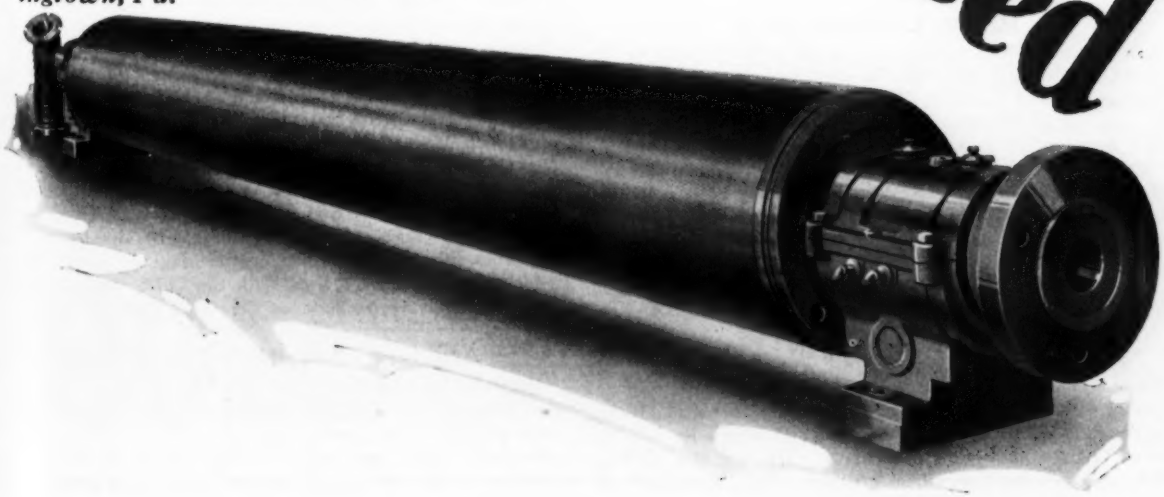
Downingtown Introduced

DOWNINGTOWN
KILBERRY PATENT SUCTION ROLL

Direct Drive

It is because of Downingtown ingenuity that the power loss and difficulties encountered with geared suction roll connections have been eliminated. Among the many noteworthy improvements introduced by Downingtown in the Kilberry Patent Suction Roll was the Direct Drive, a patented feature. This permits the installation of a suction roll for a plain couch or press roll by coupling direct to the floor drive.

The Downingtown Roll is operating satisfactorily in many mills and on many grades. Literature on request,—no obligation. *Downingtown Mfg. Co., Downingtown, Pa.*



New York Trade Jottings

H. S. Faranz, chief chemist of the Watervliet Paper Company, was a visitor to the TAPPI offices last week.

* * *

Willis H. Booth, vice-president of the Guaranty Trust Company, of New York, has been elected a director of the Celotex Company.

* * *

The William C. Jones Envelope Company, formerly of 708 Broadway, New York, recently purchased the six story building at 634 Whitlock avenue, and has been located there since February 1.

* * *

Green, Low & Dolge, Inc., of 175 Varick street, New York, have been appointed agents by the Oxford-Miami Paper Company, of West Carrolton, Ohio, for the Carrolltone and Fenwick book papers.

* * *

The Twelfth Exposition of the Chemical Industries will open at the Grand Central Palace, New York, on May 6 and will undoubtedly attract many chemical and research engineers connected with the paper industry.

* * *

Scott Paper Company reports for year ended December 31, 1928, net profit of $757,633 after depreciation, federal taxes, etc., equivalent after dividends on preferred stock to $4.04 a share on 150,000 no-par shares of common stock comparing with $596,543 or $3.03 a common share in 1927.

* * *

There was a good attendance at the regular weekly luncheon and meeting of the Salesmen's Association of the Paper Industry, at the Canadian Club last Monday, when Edward M. West, marketing expert, of Dodd & West, New York, addressed the gathering on the census of distribution which will be taken in 1930.

* * *

The Johns-Manville Corporation announces that its net profit for 1928, after deducting reserves for depreciation, depletion and Federal taxes, amounted to $5,589,398, which compared with $4,108,159 for 1927, an increase of 36 per cent. The 1928 profit, after allowing for 7 per cent dividends on the $7,500,000 of preferred stock, was equivalent to $6.75 a share on the 750,000 shares of common stock outstanding. Net sales for 1928 were $47,945,559, as against $44,313,701 for 1927, an increase of 8 per cent. At the close of the year current assets were $16,649,286 and current liabilities $4,525,226, a ratio of more than 3½ to 1. Cash and marketable securities owned totaled $3,440,477. The total assets of the company at the end of 1928 amounted to $41,105,731. The annual meeting of Stockholders will be held on February 21.

Mrs. E. J. Stilwell Dead

MINNEAPOLIS, Minn., February 11, 1929.—Mrs. Katherine M. Stilwell, wife of Eugene J. Stilwell, president and treasurer of the Minneapolis Paper Company, 73 years old, a resident of Minnesota 50 years and of Minneapolis 28 years, died Sunday, February 3, at her home, 2430 Pillsbury avenue S. She was a member of the Westminster Presbyterian church, the Woman's Club and Old Trails Chapter of Daughters of the American Revolution. Mr. and Mrs. Stilwell celebrated their golden wedding anniversary March 19. She is survived by her husband, Eugene J. Stilwell, a daughter, Mrs. Grace S. Boswell of Minneapolis; a brother, Charles T. Goewey of South Bend, Ind.; a nephew, the Rev. Roy Otis of St. Paul, and two grandchildren.

Royal S. Kellogg Weds

Announcement is made of the marriage of Royal S. Kellogg, secretary of the News Print Service Bureau, to Janet Reid Thompson, daughter of Mr. and Mrs. Alexander Hamilton Reid, in the city of Chicago on Friday, February 8. Mr. and Mrs. Kellogg will be at home after March 1, at 31 Bayley avenue, Yonkers, N. Y.

Favorably Report Schall Resolution

WASHINGTON, D. C., February 13, 1929.—The Senate Committee on Agriculture of which Senator McNary, of Oregon, is chairman has favorably reported out, with amendments the Schall resolution calling for an investigation by a select committee of Senators of the news print situation. The resolution as amended by the committee now reads as follows:

RESOLVED, That a special select committee of five Senators, to be appointed by the President of the Senate, is authorized and directed to investigate the activities of groups of American and foreign citizens controlling the supply of white paper in the United States, with a view to determining whether such activities would have the result of creating a monopoly in the supplying of paper to publishers of small daily and weekly newspapers and to report to the Senate as soon as practicable the result of such investigation, together with its recommendations, if any, for necessary legislation. The President of the Senate shall appoint members to fill any vacancies that may occur in the committee.

For the purpose of this resolution such committee or any duly authorized subcommittee thereof is authorized to hold hearings, to sit and act at such times and places during the sessions and recesses of the Senate in the Seventieth and succeeding Congresses until the final report is submitted, to employ such clerical and other assistants, to require by subpoena or otherwise the attendance of such witnesses and the production of such books, papers, and documents, to administer such oaths, and to take such testimony, and make such expenditures as it deems advisable. The cost of stenographic services to report such hearings shall not be in excess of 25 cents per hundred words. The expenses of the committee, which shall not exceed $25,000, shall be paid from the contingent fund of the Senate upon vouchers approved by the chairman.

Charles M. Nelson Dead

HOLYOKE, Mass., February 12, 1929.—Charles M. Nelson, 59, for 45 years in the paper manufacturing industry and 30 years a superintendent, died at his home Thursday night after a few hours' illness. He attended the theater with Mrs. Nelson and later was taken ill. He retired as superintendent of the Carew Manufacturing Company only a few months ago, James McKissick succeeding him.

He was born in Copenhagen, Denmark, November 8, 1870, and came to this country when two years old. He secured a job in the Winnebago paper mill at Neenah, Wis., when 13, E. J. Pope being superintendent of the mill. He came to Holyoke in 1886 and worked under John Stalker at the Valley Paper Company and William Reardon at the Albion Paper Company. In 1887 he went to the Beebe & Holbrook Paper Company, remaining at that mill till he became a full fledged machine tender in 1898. He then went to the Worthy Paper Company for two years, returning to the Massasoit Division of the American Company in 1900.

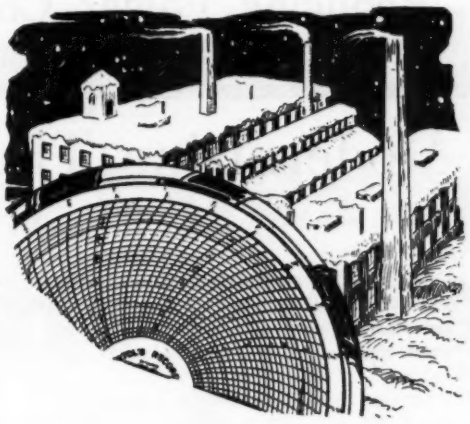
When John Stalker resigned in 1907 Mr. Nelson was made superintendent of the Massasoit and Beebe & Holbrook Divisions where he remained 10 years. He then returned to his home town of Neenah, Wis., to take charge of the three machine mill of the Neenah Paper Company. In 1923 when Leon M. Yoerg went from the Carew Manufacturing Company to the American Writing Paper Company Mr. Nelson returned East to take charge of that mill where he remained until he retired. Besides his wife who was Miss Elizabeth Stalker before marriage he leaves one son, John Stalker Nelson, of New York City. The funeral was held Sunday afternoon with burial in Forestdale cemetery.

American Tissue Mills Elect Officers

HOLYOKE, Mass., February 12, 1929.—At the annual meeting of the American Tissue Mills, Inc., held the past week resolutions were adopted on the death of the late J. Louis Perkins, Sr. The following officers were elected: President, B. F. Perkins, vice president, William H. Bond, assistant treasurer, William H. Otto.

FROM A SUPERINTENDENT AFTER HIS FIRST EXTREME COLD WEATHER EXPERIENCE WITH THE BRINER ECONOMIZER

"less steam needed at 30° below than was required last winter at 30° above"



The annual difficulties of extreme cold winters are a thing of the past for this mill. They report complete relief from tremendous drains of steam and heavy loads on boiler plant, to say nothing of the substantial savings being secured in dollars and cents.

Briner Economizer Can Be Installed Without Interfering With Present Equipment

Briner Economizers are designed and installed for practically any type of mill and machine. No drastic alterations in present dryer equipment is necessary to effect maximum steam saving by this method.

The savings are secured from full utilization of the heat in the waste vapor from regular type dryers. Economical in first and maintenance costs.

There has never been a time since the introduction of the Briner Economizer when the economies resulting from its operations are more to be desired than the present. Complete data on request.

J. O. ROSS ENGINEERING CORPORATION

208 W. Washington Street
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Main Office—
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PORTLAND, ORE.

ROSS ENGINEERING OF CANADA, LIMITED

NEW BIRKS BLDG., MONTREAL

ROSS SYSTEMS
HEATING—VENTILATING—DRYING

Power Plant Section

Reducing Power Costs Through Unit Treatment

Conducted by REGINALD TRAUTSCHOLD, Consulting Engineer

Modernizing The Mill and Power Plant

Boiler Water Conditioning

In an address before the Midwest Power Conference in Chicago three years ago, Ralph E. Hall[1], at that time Physical Chemist, U. S. Bureau of Mines, outlined the all-important problems of boiler water conditioning as consisting of the following concrete essentials:

1. Prevention of scale formation on surfaces
   (*a*) In contact with water but at which no evaporation occurs.
   (*b*) In contact with water at which evaporation is occurring.
2. Prevention of corrosion on these surfaces.
3. Selection of chemical treatment on the basis of non-condensable gases that are permissible in the steam.
4. The control of sludges and soluble salts in the boiler water, even when the entire make-up is composed of evaporated water and condensate.
5. The removal of entrained moisture from the steam.

This is one of the most lucid portrayals of the many problems in boiler water treatment ever propounded and it will well repay every paper mill man concerned with the generation of steam and power to study this address, in which Doctor Hall ably presented the ways and means developed by private interests and the U. S. Bureau of Mines, for the solution of these critical problems.

The entire question is so important in the modernizing of the mill and power plant, however, that a review and presentation of suitable equipment aids and practices in boiler water treatment can well be taken up here, feasible and practical methods which are bound to react decidedly to the advantage of those mills which have installed or will adopt them. Citations will also be presented of specific economies which have been realized in paper mill plants where various phases of the problems have been given suitable attention.

Clarification of Water Filtration

Since the water supply of many mills is derived from surface waters which are very apt to be contaminated with silt, coal dust and organic matter of vegetable or animal origin, it might be advisable to make a few preliminary remarks concerning the filtration which should precede treatment for the removal of dissolved substances and excessive material in suspension. Such clarification of the water, although it will not accomplish the ends for which water softening processes are intended, is particularly advisable in connection with the paper mill supply, for the suspended matter in the water used for paper manufacture will filter out as the water passes through the pulp. The result may be that the stock becomes discolored and modifies the various shades of the finished product, making it exceedingly difficult to reproduce color shades conforming to established standards. A crystal-clear water, even though it may contain dissolved mineral salts, will rarely discolor white paper or modify color shades.

Filtration is essentially a screening and resistance process. Suspended material, too large to pass through the filter substance is strained out and remains on the filter bed, while the smaller particles are retained in the bed by frictional resistance. Still smaller particles are colloidal in many cases and can be removed after suitable coagulation, accomplished by the precipitation of aluminum hydrate or iron hydrate. Aluminum sulphate or iron sulphate with lime is simply added to the water. This creates a precipitation which causes the small colloidal particles to combine to form larger particles, which are retained in the filter bed, or to form a mat on the surface of the filter material with interstices even smaller than those of the filter bed, so that more thorough screening is secured than is obtained with simply the filter bed. Where water carries a large amount of suspended solids, it is advisable to retain the water in settling tanks for some hours, accompanied by coagulation, before it is run through the filter, so avoiding too frequent back-washing for reviving the capacity of the filter.

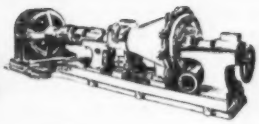
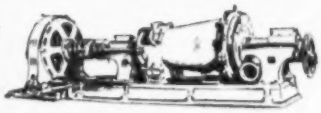
When water flows through a filter, the coarse impurities and the coagulated solids are retained on the surface of the filter bed. This does not interfere with filtration, other than that frictional resistance is increased and finer screening results than when the filter is first placed in service. However, when the accumulation of solids on the surface of and in the filter bed becomes excessive, when the frictional resistance amounts to about 5 pounds per square inch, it is usually advisable to revive the filter by back-washing. This is accomplished by forcing wash water rapidly through the filter bed in reverse direction, causing a "boiling" of the filter material and dislodging the suspended matter. Sometimes it is even desirable to supplement such back-washing with air agitation.

The back-washing operation is emphasized in this way for the reason that adequate facilities for effective back-washing really constitute one of the chief essentials for an efficient filter. The accuracy and reliability of the provisions made for the sensitive proportioning of the coagulant and the control over the feeding apparatus are also highly important for a truly satisfactory filter.

Prevention of Scale Formation

Calcium and magnesium are the principal elements concerned with the formation of objectionable scale in boilers and auxiliary equipment, compounds of which constitute quite frequently as much as 85 or 90 per cent. of the total mineral solids in the water supply, and it is in the prevention of scale formation by these elements that boiler water conditioning functions, while at the same time combating corrosion. In the feed lines of the boiler, calcium carbonate scale accumulates from untreated water by reason of the breaking down of the calcium bicarbonate which is in solution in most natural water supplies. As the temperature of such waters is elevated, the carbon dioxide gas dissolved in the water, which is essential for the presence of calcium bicarbonite, is driven off and mono-carbonate of calcium, calcium carbonate, scale, which is insoluble, settles in the pipe lines between the feed-water heater and the boiler and within the boiler, in some types, near the

[1] Hall Laboratories, Inc., Pittsburgh, Pa.

..heavy stock or light coarse paper or fine  a Noble & Wood Jordan  makes it-*better!*

NOBLE & WOOD

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Hoosick Falls, N. Y.

feed-water inlet. Magnesium bicarbonate, which is also very apt to be present in the raw feed-water, reacts in a very similar manner, as the temperature of the water rises.

The hard, adherent scale which forms on the evaporating surfaces consists very largely of calcium sulphate, though magnesium sulphate scale may also adhere to the surfaces in contact with water at which evaporation occurs. These are the chief trouble makers and the treatment of the boiler feed-water which will prevent the formation of the calcium sulphate scale will also arrest the formation of magnesium silicate. The formation of calcium sulphate scale is explained by the fact that the solubility of this compound decreases rapidly with elevation in the water temperature. As the temperature of the water in actual contact with the boiler tube or evaporating surfaces is naturally the maximum it attains in boiler operation, the precipitated calcium sulphate is thrown down as adherent scale on the boiler tube and evaporating surfaces which are in contact with the water while evaporation is occurring.

The solubility of calcium carbonate, however, is least where the temperature is the lowest, so if the calcium sulphate could be converted into calcium carbonate, the precipitation of the solid would not form as adherent scale on the tube surfaces, etc., but rather as crystals in suspension in the rapidly circulating water. The prevention of the hard, adherent scale on the evaporating surfaces is to be accomplished then by such treatment as will insure the precipitation of the calcium salts in the form of calcium carbonate or other non-adherent calcium salt rather than as calcium sulphate. Such precipitation occurs in the presence of sodium carbonate. The calcium sulphate combines with the sodium carbonate to form calcium carbonate and sodium sulphate. The solubility of calcium sulphate is dependent upon the concentration of sodium sulphate and the boiler pressure, however, so a very delicate chemical balance is entailed in effecting the desired chemical reaction. The amount of sodium carbonate which must be present in the boiler water to insure the precipitation of the calcium carbonate must be accurately proportioned to the permissible concentration of sodium sulphate and also to the boiler pressure.

Not only are the elements of calcium and magnesium responsible for the very large majority of scale troubles, but the action of heat plays an important part in both the formation of the scale and in certain effective methods of combating the scale evil by boiler water conditioning. The heating of a water supply containing calcium bicarbonate or magnesium bicarbonate precipitates the salts in the form of carbonate, which is the form of the chief constituent of scale in the feed lines of the boiler. Calcium carbonate is also the form in which the calcium salts responsible for the hard, adherent scale on the evaporating surfaces should be precipitated in order to prevent scale formation.

Bicarbonate of calcium treated with calcium hydroxide, or caustic lime, also forms calcium carbonate. Furthermore, the treatment of the water supply with lime when hot makes the chemical reactions almost instantaneous and the precipitate which is formed readily settles. The treatment of calcium sulphate with sodium carbonate, soda ash, likewise stimulated by heat, also forms calcium carbonate in the form of a crystal precipitant. These simple reactions are taken advantage of in what is known as the hot process lime-soda method for softening water, in which the scale forming salts are largely removed by precipitation. The calcium and magnesium carbonates can be reduced to about 1½ grains per gallon and the calcium sulphate, first transformed into calcium carbonate and sodium sulphate by the soda ash, removed entirely, effecting a reduction in total solids of between 50 and 51 per cent. in many cases.

Another of the approved methods for softening water is customarily designated as the zeolite method, for certain natural sands, zeolite sands, are employed to remove the scale forming salts. These sands possess the peculiar porperty of substituting, or replacing, the calcium and magnesium elements in the scale forming salts with sodium to form sodium salts which are soluble. By this method, the calcium and magnesium carbonates found in the boiler water can be reduced to about ½ grain per gallon and the calcium sulphate, as in the line-soda method of softening, eliminated, but the resulting presence of sodium carbonate, etc., is nine or more times as pronounced frequently as it is in water softened by the lime-soda method.

These two methods of boiler water treatment are very nearly on a par, so far as the removal of scale forming compounds is concerned, but the conversion of lime and magnesium carbonates to sodium carbonate in the zeolite process does not effect as marked a reduction in total solids. In fact, as compared with a reduction of 50 or more per cent. in the lime-soda method of water softening, the total solids are actually increased by about 11 per cent. The presence of this considerably greater proportion of soluble solids may at times be quite undesirable. It increases the foaming and priming tendencies of the boiler and the excess sodium carbonate is a factor in the development of caustic embrittlement.

COMPARATIVE TREATMENT OF BOILER WATER

Chemical salts	Grains per U. S. gallons		
	Raw water	Lime-Soda softened	Zeolite softened
Calcium carbonate	8.34	1.00	0.20
Magnesium carbonate	4.56	0.50	0.30
Calcium sulphate	5.26	None	None
Silica	0.34	0.34	0.34
Iron and alumina	0.46	0.25	0.46
Sodium chloride	2.46	2.48	3.00
Sodium sulphate	None	5.50	5.50
Sodium carbonate	None	1.50	13.82
Total mineral solids	21.42	10.57	23.62
Reduction in total solids		50.7%	
Increase in total solids			11.0%
Relation of sodium sulphate to sodium carbonate		3.66	0.40

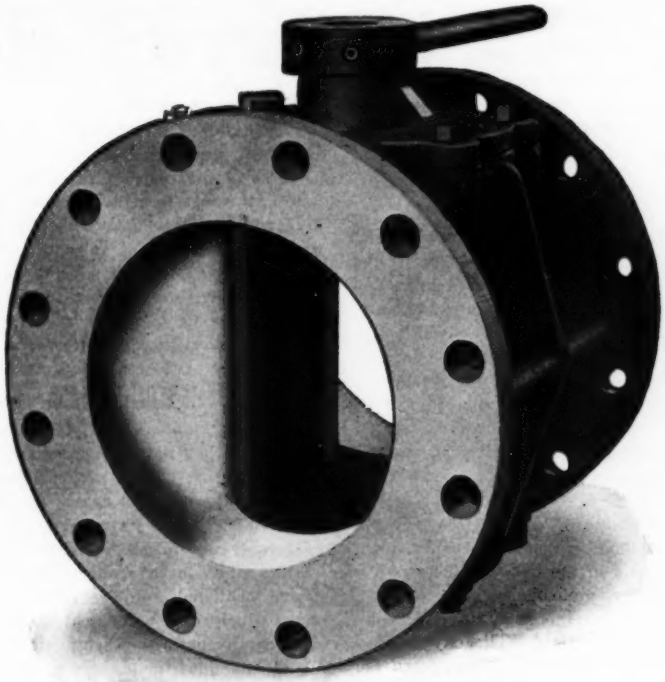
Courtesy: Cochrane Corporation.

It is sometime found advisable to combine the lime-soda and zeolite methods, treating the boiler water first with one system and then the other. If the preliminary treatment is by the lime-soda method, the calcium and magnesium carbonates can be reduced to about 1½ grains per gallon and then by subjecting the water to a further zeolite softening treatment, the lime-magnesia content can be reduced to "zero" with only a slight increase in sodium content. The processes are also sometimes reversed in the treatment of very hard water, in order to avoid throwing too much sodium into the boiler water.

Conditioning for High-Pressure Operation

In the treatment of water for high pressure boiler service, trouble is sometimes encountered with the use of soda-ash, sodium carbonate, as the reagent to convert the calcium salt from a sulphate to a carbonte. This is due to the decomposition of the soda ash into caustic soda and carbon dioxide, completing the maintenance of satisfactory carbonate concentration and making it difficult or impossible to keep within the alkalinity ratio essential for precaution against caustic embrittlement. In such case it is found that the substitution of sodium phosphate, which is a stable substance, for the sodium carbonate, at least in a final treatment of the boiler water, will keep the total alkalinity in the boiler water well within the limits considered necessary from the point of view of caustic embrittlement.

As a practical answer to the complete conditioning of water for high-pressure operation, the U. S. Bureau of Mines states that if the make-up water is evaporated and the only impure water entering the boiler consists of the condenser leakage, the conditioning of the boiler water with phosphate is the only chemical control necessary. If the make-up water is not evaporated, however, it will usually be found most economical to subject the water to a pretreatment conditioning, or softening, by the hot process lime-soda method, or if the water does not contain bicarbonates of calcium and magnesium by the zeolite method. Following such pretreatment, a final conditioning of the water with phosphate should be made. In the pretreatment by the lime-soda or zeolite methods, the addition of any excess chemical should be carefully guarded



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against for otherwise excessive concentration of caustic alkalinity may develop it in the boiler water.

At times, it may be advisable to limit the soluble solids even below the relatively low values secured with the lime-soda method of water softening. In such instances, this may be effected by using barium carbonate in the softener in place of the cheaper sodium carbonate. In this manner, much of the sulphate is removed, as well as the calcium.

Prevention of Corrosion

The evils of corrosion may also be divided into two classes; that which occurs in the feed pipes, economizers, etc.; and that on the evaporating surfaces, in the boiler itself. In the feed pipes and economizers, the temperature is relatively low and the liberation of hydrogen not excessive, but the amount of oxygen which may be present may be quite marked, and corrosion correspondingly prevalent. The remedy for this situation, consequently, lies in either diminishing the acidity of the water or in the removal of the excess oxygen.

The reduction of acidity is a difficult matter, for while any excess in the amount of sodium carbonate provided to prevent the formation of adherent scale is beneficial in this connection the practice cannot be carried sufficiently far to prevent corrosion without serious danger of the sodium carbonite breaking down and unduly concentrating the caustic in the boiler. The removal of excess oxygen is far easier. It can be effected in large measure in the feed-water heater if the water is brought to its boiling temperature and the heater is well ventilated. The oxygen may also be disposed of by the use of a suitable deaerator, often the simplest way.

The prevention of corrosion in the boiler itself is effected in a way as a function of the chemical treatment of the water for the purpose of scale prevention. That is, the chemical treatment of the water for scale prevention at the same time functions in minimizing the electro-chemical action which is corrosion. The sodium carbonate present in the water is in a continuous state of gradual decomposition, forming caustic soda and carbon dioxide, developing a hydroxyl and, consequently, controlling the hydrogen-ion concentration. With the hydroxyl concentration relatively high, the hydrogen-iron concentration is correspondingly low, since the dissolved oxygen in the water unites with the hydrogen in the presence of iron, and the rate of metal solution, corrosion, is thus minimized.

Removal of Sludge, Etc.

The process of evaporation within the boiler promotes the concentration of the boiler water and the precipitation of sludge and suspended insoluble matter. The removal of this sludge, etc., is a phase of boiler water conditioning which is usually met in one of three ways: a periodic blow-down of the boiler may be relied upon to control the accumulation; much of the material may be removed by filtration or setting the solids resulting from the water softening treatment outside the boiler; or a portion of the boiler water may be filtered continuously and so control to some extent the amount of suspended matter in the boiler water. In any case, a periodic blow-down is essential, but this becomes imperative, naturally, after different periods of boiler service for the various methods of sludge removal.

Filtration of the boiler water so far as the removal of suspended solids is concerned, obviously, is equivalent to a continuous blow-down of like quantity accomplished without the loss of heat incident to a blow-down. Filtration is also most efficacious in maintaining low concentration for the reason that it is invariably undertaken with the water containing a maximum of material in suspension.

Prevention of Wet Steam

The final phase of boiler water conditioning is concerned with the removal of entrained water in the steam and the prevention of "slugs" being carried over with the steam. The prevention or control of foaming and of priming, from whatever cause, is entailed, through the careful regulation of the hydroxyl content in the boiler water and the return to it of any cylinder oils are held to be preliminary steps in the prevention of moisture in the steam. The final solution, however, is the utilization of an effective type of mechanical steam purifier.

This phase of the question was pretty well covered in the discussion, "Steam and Water Purification," published in these columns in the issue of the PAPER TRADE JOURNAL for April 5, 1928. It would seem unnecessary, consequently, to enlarge on it here and better to devote the balance of the present discussion to a few examples of substantial benefits realized in individual paper mill plants attributable to various phases of the problems of boiler water conditioning. Before doing so, however, it would appear advisable to present a few brief remarks concerning the question of caustic embrittlement, to which passing references have already been necessarily made.

Caustic Embrittlement Control

In caustic embrittlement, the steel of the boiler loses its elasticity and, when the evil becomes well advanced, becomes as brittle as cast iron. While such phenomenon has been given a great deal of study, its exact causes are still enshrouded in a good deal of mystery, though its general characteristics may be said to be fairly well recognized. For instance, one of the first signs of embrittlement is leakage about the blow-off flange of a boiler, between the flange and the boiler plate, or through other riveted seams which resist permanent stoppage by caulking. Consequently, if leakage recurs after careful caulking, the boilers should be thoroughly examined for positive signs of embrittlement.

If there are fine intercrystalline cracks apparent in parallel lines between rivet holes, ordinarily below the water line, it is almost certain that caustic embrittlement has set in. It will also be found that the ratio of sodium bicarbonate or sodium mono-carbonate to sodium sulphate is abnormally high. Another condition usually encountered with embrittlement is that boiler seams or riveted joints are so constructed as to allow some boiler water to seep in between the seams. When this takes place, it is apt to allow the concentration of caustic soda with little or no sodium sulphate present.

The presence of about twice as much sodium sulphate as caustic soda prevents embrittlement. This holds true in the case of the bolier water as well as in instances of localized concentration.

It is also held that embrittlement is attributable to the presence of nascent hydrogen liberated by the action of a hydroxyl upon iron. The action is likened to that of pickling with dilute acids, which is known to cause the embrittlement of steel. The action of sodium hydrate at high boiler temperature is believed to be somewhat similar. However, laboratory experiments with the view of promoting the embrittlement of steel subjected to heavy strain have necessitated the use of concentrations of sodium hydrate many times in excess of those ever permitted in modern boilers and far in excess of anything which could be regarded as good practice in modern boiler operation.

A precaution against the dangers of caustic embrittlement which has been advanced and which would appear to be entitled to consideration deals with the carbonate hardness of the raw water supply. It is stated that when the carbonate hardness in a water exceeds the permanent hardness by more than 3 grains per gallon or when sodium bicarbonate is present in excess of 3 grains per gallon, treatment should be undertaken to remove free carbon dioxide and to reduce the carbonates before using either soda or softening for removal of permanent hardness.

Benefits of Boiler Water Conditioning

Superficial as these brief remarks concerning such an important matter as caustic embrittlement must appear to the specialist in boiler water conditioning, it would now seem more advisable to discuss some of the concrete benefits which have been realized in specific paper mill establishments by attention to various phases of the quite complicated question of boiler water conditioning.

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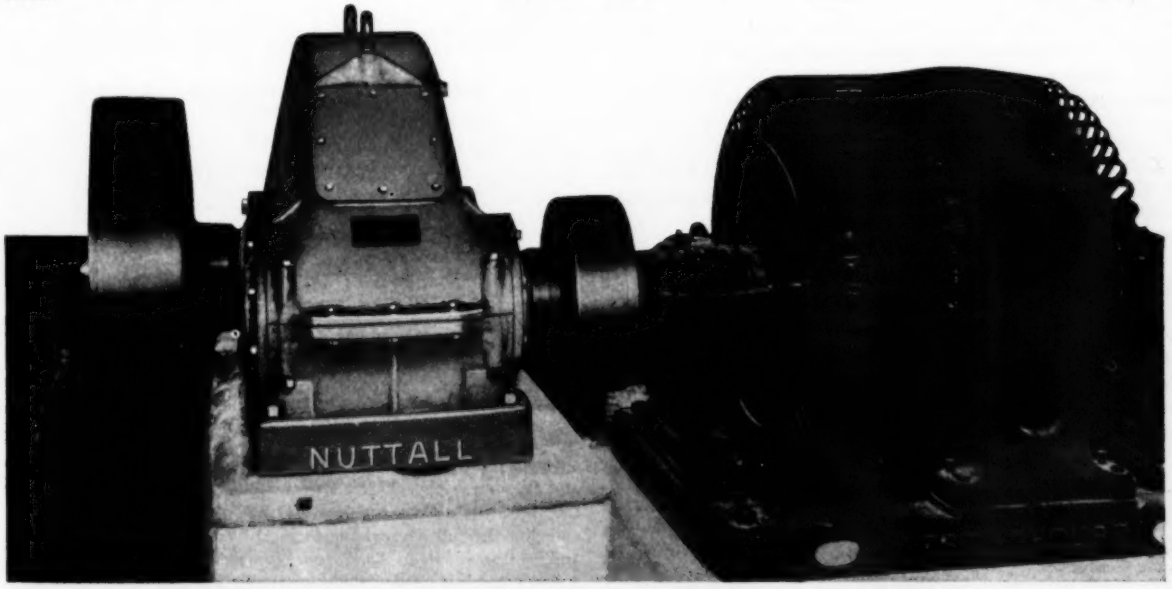
A Westinghouse-Nuttall single-reduction unit on a Jordan engine drive transmitting 400 hp. at 900 rpm. with a ratio of 7.5:1.



Westinghouse

The consideration of all phases of the many problems entailed is obviously out of the question in a discussion of this character. Taking up first simply the phase of water softening, consequently, a few pertinent remarks concerning the beneficial experiences enjoyed in one or two individual establishments should prove of general interest.

For illustration, the Container Company of America depends upon the none too pure water from the Schuylkill river for the operation of its plant at Manayunk, Pa. A 24,000 gallon per hour hot process lime-soda softener is employed for treating this water and has done so so satisfactorily that it has been found unnecessary to take down the boilers for inspection more than once a year, when they are subjected to a thorough cleaning. In spite of the long interval between inspections, it is found that not enough scale accumulates during the year to damage the boiler tubes or to reduce the efficiency of the boiler appreciably, operation throughout the year being maintained at a uniformly high ranking without additional cleanings.

Courtesy: Cochrane Corp.

SAMPLES OF SCHUYLKILL RIVER WATER FROM MCDOWELL PAPER MILLS

A similar hot process lime-soda softener has been used at the plant of the Diamond State Fibre Company since about 1920 for the boiler feed makeup of a 1,000 horsepower boiler which is operated continuously at ratings of from 150 to 200 per cent. and is frequently driven much harder. The boiler is customarily taken down for internal inspection and cleaning about once a month. This is an excellent precautionary practice, or, course, and owing to the efficiency of the water softener not a single boiler tube has been lost during the eight or nine years which could be attributed to the formation and accumulation of scale.

Another instance of the efficiency of proper boiler water conditioning, and particularly of the final phase of removing entrained moisture from the steam, is illustrated strikingly in the experiences of the McDowell Paper Mills, also on the Schuylkill river near Philadelphia. The river at this point, from which the boiler feed is taken, carries considerable coal dust from the anthracite mines in the Schuylkill Valley and a good deal of other foreign matter. In fact, an analysis of the raw feed water shows total solids totaling 17.55 grains per gallon.

ANALYSIS OF RAW FEED WATER FROM SCHUYLKILL
McDowell Paper Mills

Calcium carbonate	5.13	grains per gal.
Calcium sulphate	4.02	
Magnesium carbonate	1.81	
Magnesium chloride	2.51	
Silica	.82	
Iron and alumina	.23	
Sodium chloride	2.80	
Volatile and organic	.23	
Total solids	17.55	grains per gal.

Courtesy: Cochrane Corporation.

This water is treated in a hot well with a combination of soda ash and tri-sodium phosphate before being fed to the boilers, consisting of a battery of two 450-horsepower water tube units operated at about 150 per cent. rating and three 200-horsepower horizontal return tubular boilers operated at about rating.

On account of the method of treating the feed water and because of excessive variations in water levels in the boilers, considerable trouble was experienced in the past with priming and foaming. So much so, in fact, that it was not then feasible to use as much chemical in the water treatment as necessary to prevent scale. The priming and foaming caused much trouble from wet steam in the engine cylinders, rapid accumulation of dirt on the blades of the turbine and a constant rain from the exhaust head. Lag in heating the calendering rolls of the paper machines was apparent.

The plant is not equipped with superheaters and all the steam is collected in one main, an arrangement which made it possible to pass the entire steam flow through a single auxiliary type of steam purifier. This is the plan which was followed with the result that troubles due to priming and foaming disappeared. There is no rain from the exhaust head and there are no deposits on the turbine blades. The calendering rolls, furthermore, heat up in about half an hour less time and it has been possible to cut down considerably on the lubricating oil for the reciprocating engine.

While the troubles attributable to priming and foaming have disappeared, the avoidance of wet steam is due to the efficient operation of the steam purifier which removes from 96 to 97 per cent. of the moisture from the steam as it is collected in the common steam main, for at times priming and foaming at the individual boilers is so heavy that the trap draining the purifier discharges almost continually. In spite of this, the steam as it comes from the purifier is practically dry, averaging on test considerably less than 0.05 per cent. Before entering the purifier, the steam frequently contains several per cent. of water.

A striking proof of the effectiveness of the steam purification secured in this manner is shown in the illustration of three jugs of water drawn off at different points in the system. The sample in the jug to the left was taken from the boiler blow-off after the initial slug of mud had been blown out, that in the center jug from the discharge of the trap draining the purifier, and that to the right, crystal clear, from the calorimeter sampling line in the outlet pipe from the purifier. The dark discoloration of the water

EFFECTIVENESS OF STEAM PURIFICATION
McDowell Paper Mills

Before purifier				After purifier			
T	T_2	T_{2c}	Moisture per cent	T	T_2	T_{2c}	Moisture per cent
358	295	298	0.25	358	300	303	0.00
360	290	293	.60	360	300	303	.08
360	294	297	.35	360	300	303	.08
361	293	296	.45	361	300	303	.10
363	293	296	.50	363	301	304	.10
359	286	289	.80	359	300	303	.05
358	280	283	1.20	358	300	303	.00
358	275	278	1.35	358	300	303	.00
358	248	251	2.85	358	300	303	.00
358	265	268	1.90	358	299	302	.05
358	264	267	2.00	358	300	303	.00
359	250	253	2.75	359	300	303	.05
358	220	223	4.35	358	300	303	.00
360	252	255	2.65	360	300	303	.05
Average			1.57	Average			0.04

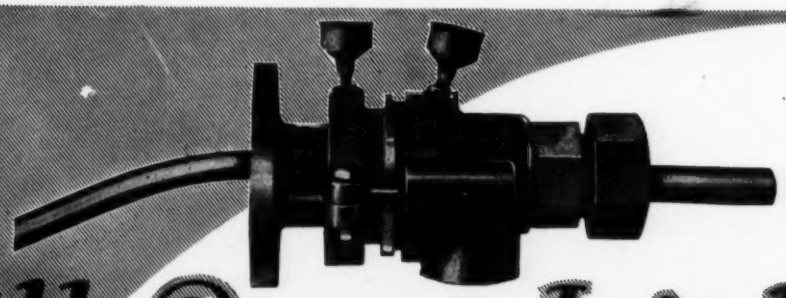
Courtesy: Cochrane Corporation.

in the first two jugs is due, of course, to the coal dust carried in suspension in the water, even after its treatment with soda-ash and tri-sodium phosphate. The clearness of the condensed steam in the third jug shows conclusively that all the contaminated water entering the purifier, which formerly was carried into the power and mill equipment, has been removed and drained off by the trap. Chemical tests of these water samples confirms this by disclosing the fact that the water from the boiler contains 13 grains of sodium chloride per gallon, the trap discharge 8 grains per gallon and the condensed steam from the purifier such a small trace that it can hardly be measured.

Dividends Derived from Steam Purifiers

This experience of the McDowell Paper Mills is extremely per-

The Smith Dryer Joint



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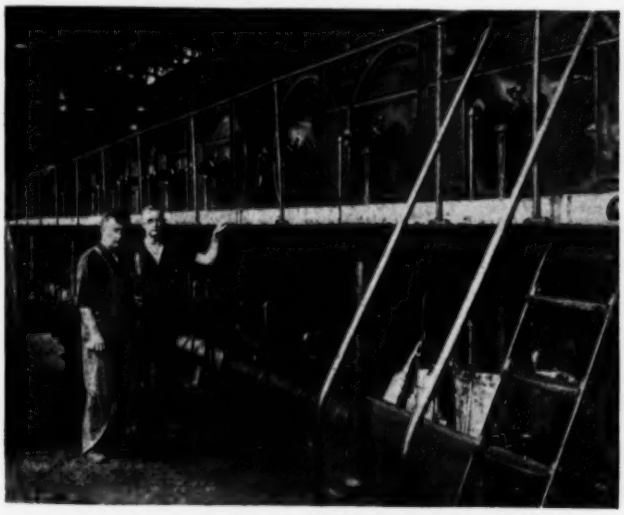

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STEAM PURIFIER DIVIDENDS

Location of installation	Equipment	Approximate Investment	Major economies realized	Estimated annual savings
Robert Gair Co., Montville, Conn.....	4 steam purifiers	$3,230.00	Stopped losses due to slugs, reduced superheat, clogging of trap and decreased beater engine efficiency.	$4,619.00 net
American Box Board Co., Grand Rapids, Mich...	3 steam purifiers	1,868.00 ($2,300 installed)	Reduced boiler tube maintenance and increased superheat 23 deg.	2,276.00 gross 1,795.10 net
Champion Coated Paper Co., Hamilton, Ohio....	7 steam purifiers	11,935.00	Increased superheat, reduced turbine maintenance, saved on packing and upkeep of engines and saved in cleaning of governors of variable speed engines.	5,610.00 net
Philip Carey Mfg. Co., Lockland, Ohio.....	Several steam purifiers	4,119.75	Reduced pipe line repairs and increased plant production by more efficient operation of driers.	2,500.00 net in pipe line repairs

Courtesy: Blaw-Knox Company.

tinent, in that it is indicative of the highly profitable character of the final phase in boiler water conditioning, removal of entrained moisture from the steam, even when other phases of a complete conditioning of boiler water may not have been met with entire satisfaction. In many instances, an investment in an efficient steam purifier alone has proved highly profitable.

Steam purifiers in four boilers at the Montville plant of the Robert Gair Company, for example, are reputed to yield a net return of 143 per cent. annually on the investment their installation entailed. Three similar steam purifiers at the Grand Rapids plant of the American Box Board Company net an annual yield of 78 per cent. Seven such units at the Hamilton mills of the Champion Coated Paper Company are said to save $5,610.00 a year, which is equivalent to an annual return on the investment of 46 per cent. The Philip Carey Manufacturing Company at Lockland, Ohio, is credited with effecting a 60 per cent. return on investment. These specific instances, some statistical data concerning which are listed in the accompanying table, can doubtless be matched with the experiences of many other of the progressive pulp and paper mills which have given attention to the matter, so it should suffice here simply to discuss briefly the experiences of one more mill which installed steam purifiers, but only after considerable trouble developed with wet and dirty steam in a power plant planned especially for maximum economy in operation.

As reported by James H. Kraus, Chief Engineer of this plant, Eagle Paper Company, Joliet, Ill., a new power plant, equipped with efficient water tube boilers operating at 300-pound pressure and 200 degrees superheat, a large turbine exhausting to the paper machine and a smaller mixed pressure turbine connected so as to supplement the exhaust from the main turbine under certain coditions, was put in operation in 1924. Shortly after the plant was started up, the expectancy of highly economical service was somewhat dampened by the fact that the efficiency of the large turbine dropped off noticeably. On opening up the unit, it was found that a considerable amount of scale and sludge was being carried over from the boilers and deposited in the turbine.

The feed water supply is secured from local wells, the water from which contains from 25 to 35 grains of scale-forming salts per gallon. Treatment with lime and soda reduces this hardness considerably, to 1-½ to 2 grains per gallon, but with the soluble salts quite high. It was ascertained that these salts were being carried through the superheaters and into the turbines, with quite harmful effect. To mitigate the evil, steam purifiers were installed in the boilers and since this was done no trouble with sludge being carried over from the boilers has been experienced. The steam purifiers also take care of the elimination of all water and entrained salts in the steam.

At the present time, the boilers are simply blown down sufficiently to clean out the mud drum three times per 8-hour shift and it is claimed that the loss in boiler water from all sources and causes averages only about 5 per cent. The concentration in the boiler varies from 300 to 500 grains per gallon. The result has been that the turbine efficiency has held constant, inspection of the large turbine after seven months of continuous operation with the steam purifiers functioning disclosed the fact that they were then fully as clean as when first put in operation. A semi-annual cleaning of the turbines which would otherwise be necessary costs in the neighborhood of $500.00 a year, far more than the slight loss experienced in boiler water, and this is avoided.

Another important improvement traceable to the use of dry steam is an increased production of 26 per cent. by the dryers. Half of this, 13 per cent., is attributed by the management to the fact that the steam purifiers remove all the solids as well as the water entrained in the steam. Also, while the boilers are ordinarily driven at about 150 per cent. rating, the improved conditions make it possible for one boiler, half the battery, to carry the entire plant load without any indication of wet steam reaching the superheaters and for a single boiler to pick up the full load in the brief interval of 4 minutes.

It is now held by leading authorities that the use of steam purifiers is essential where boilers are operated at high and variable ratings. Wherever investigations have been conducted, this seems to be well confirmed and it would seem very much as if quite handsome dividends can almost always be derived from an investment in efficient steam purifiers.

In presenting this necessarily general discussion on boiler water conditioning many phases of the problems involved have had to be slighted and some quite effective methods of boiler water treatment disregarded. The question of employing so-called boiler compounds has been omitted entirely for the reason that while compounds prepared specifically for definite water conditions may prove quite satisfactory, compounds as a cure-all are to be shunned, avoided much as are many patent medicines. The problems entailed in the complete conditioning of waters for boiler services are altogether too complex, involved and distinctive to justify definite recommendations being made by other than a qualified expert who has investigated all pertinent conditions and requirements. In fact, such expert advice should be secured in connection with the installation of any system or method of water conditioning. The remarks which have been advanced here are intended simply to focus the attention of the pulp and paper mills upon the importance of boiler water conditioning when striving for economical mill operation and reduction in production costs.

Phases of the subject will certainly be taken up again in subsequent discussions. In fact, a resume of the present status of the water softening art, covering many of the more important phases of the many problems entailed, by or in collaboration with a prominent specialist in the field, is planned for this section in the course of a few weeks.

New Ljungstrom Air Preheater Catalog

The Air Preheater Corporation, of 25 Broadway, New York, has just issued a new Ljungstrom Air Preheater catalog, in which this valuable system for recovering heat from flue gas, preheating combustion air, improving boiler efficiency, increasing steaming capacity, and effecting substantial fuel and money savings in power plants, etc., is comprehensively explained and profusely illustrated.

Stack temperatures and losses, waste heat recovery, combustion conditions, fuel-burning equipment, furnace refractories, and their effects upon performance of high-pressure and medium-pressure boilers, are among the subjects that are freely discussed in this attractive booklet.

Your Paper Is Made In Your Beaters.

ask Mr. Cullen

At the International Mill at Bastrop, Louisiana, where the famous "Gator Hide Kraft" is made, and at their big Camden Mill at Camden, Arkansas, where two big 212" machines reel off the sheet at a speed of 800 feet per minute, their batteries of Dilts New Type Beating Engines are so satisfactory that they have specified Dilts equipment for their latest and greatest mill now being built at Mobile, Alabama.

Big Mills in competitive markets use Dilts New Type Beating Engines, and as the International Paper Company's expansion in the South is of universal interest, and as they are using Dilts New Type Beating Engines with such satisfactory results, we suggest you "ask Mr. Cullen."

View of Dilts New Type Beaters in Camden Mill.

Dilts
MACHINE WORKS, Inc. FULTON, N.Y.
EXPORT OFFICE - 15 PARK ROW - NEW YORK CITY

Your Paper Is Made In Your Beaters.

PAPER AND PAPER STOCK IMPORTS AND EXPORTS OF THE UNITED STATES

For the Month Ending November 30, and for the Eleven Months Ending November 30, 1928 as Compared with Corresponding Months of Previous Year

IMPORTS—PAPER

	November				Eleven Months Ending November 30			
	1927		1928		1927		1928	
	Quantity	Value	Quantity	Value	Quantity	Value	Quantity	Value
Paper and Manufactures (total)	.....	$14,202,372	.....	$14,147,560	.....	$136,093,480	.....	$141,926,254
Printing paper—								
Standard news print...lbs...free	377,247,392	12,669,152	402,830,612	12,772,976	3,612,789,654	119,626,033	3,898,279,323	126,321,350
Imported from—								
Finland ...lbs.	2,375,453	68,360	8,971,559	223,128	55,420,331	1,568,476	71,239,160	1,841,515
Germany ...lbs.	730,266	22,702	1,511,787	38,527	12,643,199	398,264	16,876,574	453,537
Norway ...lbs.	2,646,058	74,586	2,286,097	64,085	28,754,923	778,902	19,091,629	516,330
Sweden ...lbs.	11,307,482	309,871	12,597,996	329,627	122,127,776	3,486,555	101,992,889	2,695,543
Canada ...lbs.	333,373,940	11,331,408	335,090,574	10,809,174	3,240,895,713	108,404,231	3,492,694,974	114,647,627
Newfoundland and Salvador...lbs.	26,271,355	846,599	42,364,583	1,307,173	151,317,025	4,939,697	195,669,499	6,144,938
Other countries ...lbs.	542,838	15,626	8,016	1,262	1,630,687	49,908	714,598	21,860
All other, n. e. s...lbs...dut.	1,001,817	48,490	372,843	18,601	9,834,705	485,301	6,674,010	312,856
Grease-proof and waterproof papers...lbs...dut.	135,022	20,077	132,907	24,338	1,484,282	241,260	1,199,402	220,120
Kraft wrapping paper...lbs...dut.	1,275,657	53,060	918,728	39,067	10,346,665	440,209	9,812,481	420,097
All other wrapping paper...lbs...dut.	2,203,817	49,981	1,013,392	27,403	9,991,397	275,377	15,105,541	362,010
Writing, letter, drawing, etc., papers...lbs...dut.	264,634	74,532	257,302	71,801	3,160,043	818,165	2,834,801	749,208
Surface-coated paper ...lbs...dut.	158,203	72,956	185,495	84,312	2,078,568	840,136	2,160,501	1,017,126
Tissue, copying, etc., papers...lbs...dut.	342,976	214,636	321,089	205,431	2,885,582	1,635,688	3,238,769	1,872,531
Paper boards, n. e. s.—								
Pulp boards in rolls...lbs...dut.	5,471,442	124,251	4,230,171	93,915	55,213,772	1,314,715	50,235,361	1,097,505
Paper boards, pulp board, and card board ...lbs...dut.	}		{ 1,377,190	22,473	}		{ 18,281,968	404,264
Leather board, test, and wall board...lbs...dut.	}	51,593	{ 41,126	2,092	}	776,571	{ 792,897	23,087
Cigarette paper, cigarette books, and covers ...lbs...dut.	835,924	236,583	1,146,652	306,102	13,790,543	4,045,133	10,687,327	2,892,486
Hanging paper (wall paper)...lbs...dut.	209,731	60,687	218,978	53,873	2,022,078	557,411	1,875,457	596,682
Duplex decalcomania paper, not printed...lbs...free	57,971	13,371	14,862	3,659	668,294	150,967	610,546	137,936
Paper boxes ...lbs...dut.	263,895	179,435	197,420	135,634	2,261,286	1,317,758	2,689,743	1,655,350
Pulp or papier mâché and manufactures, n. e. s. ...dut.	.....	18,762	.....	26,317	.....	306,737	.....	391,961
All other paper and manufactures...dut.	.....	314,806	.....	259,566	.....	3,262,019	.....	3,451,685

WOOD PULP

Mechanically ground wood pulp...tons..free	25,275	618,625	17,524	427,227	196,985	5,405,663	198,239	4,858,221
Sulphite wood pulp...tons	90,778	5,349,879	78,204	4,790,417	829,785	32,860,490	847,564	50,133,449
Unbleached ...tons..free	65,620	3,381,098	49,501	2,563,084	542,589	30,433,480	568,750	28,960,568
Bleached ...tons..free	25,558	1,968,781	28,703	2,227,333	287,196	22,427,010	278,814	21,172,881
Imported from—								
Finland ...tons	4,660	211,063	4,986	243,089	64,874	3,351,052	85,645	3,758,209
Germany ...tons	4,443	289,750	5,008	343,741	45,057	3,193,228	56,761	3,778,719
Norway ...tons	7,241	500,071	4,753	286,695	64,318	4,803,573	57,254	3,907,984
Sweden ...tons	38,701	2,072,538	30,464	1,799,979	304,771	18,202,963	288,737	15,979,984
Canada ...tons	32,752	2,086,617	30,570	1,972,558	318,602	21,340,291	324,805	20,806,698
Other countries ...tons	2,981	189,840	2,423	144,355	32,163	1,969,383	34,362	1,901,855
Sulphate wood pulp, unbleached (kraft pulp) ...tons..free	35,968	2,128,313	33,953	1,866,229	300,063	18,400,737	321,812	17,948,501
Imported from—								
Finland ...tons	1,805	85,809	2,228	104,215	12,973	673,922	23,843	1,066,596
Norway ...tons	835	48,345	2,048	134,648	9,278	524,298	12,589	689,297
Sweden ...tons	21,224	1,196,149	16,809	872,587	149,919	8,864,858	155,170	8,112,999
Canada ...tons	11,679	772,796	12,376	730,302	126,551	8,255,484	126,773	7,921,797
Other countries ...tons	425	25,214	492	24,477	1,342	82,175	3,437	157,812
Sulphate wood pulp, bleached...tons..free	697	48,977	372	27,780	10,693	702,722	12,412	767,895
Other pulp ...tons..free	1,221	68,011	676	44,209	3,277	236,420	6,419	432,048

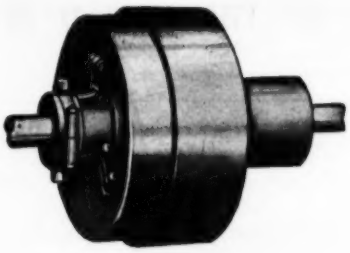
CRUDE PAPER STOCK

Rags for paper stock...lbs...free	39,875,441	718,444	35,034,324	645,962	351,832,186	7,027,219	407,140,353	7,501,244
Waste bagging, waste paper, etc...lbs...free	9,988,668	118,779	9,211,194	108,339	97,348,557	1,288,673	136,824,384	1,820,449
Old rope and all other paper stock...lbs...free	3,486,469	131,058	10,897,169	229,062	59,377,986	1,796,540	62,117,597	1,798,267

CHEMICALS AND OTHER PAPER MAKERS' MATERIALS

Colors, dyes, stains, color acids, and color bases, n. e. s. ...lbs...dut.	558,440	634,861	458,736	485,800	5,139,309	5,732,024	5,472,650	6,037,214
Imported from—								
Belgium ...lbs.	22,618	22,757	7,658	6,679	169,471	227,440	107,319	128,001
France ...lbs.	23,213	32,830	4,000	8,391	169,279	201,763	64,201	80,023
Germany ...lbs.	355,503	373,510	267,635	263,265	3,090,315	3,262,574	3,473,782	3,632,825
Italy ...lbs.	9,629	9,539	4,292	4,404	95,429	108,981	58,130	54,817
Switzerland ...lbs.	136,882	181,862	169,464	197,726	1,389,733	1,707,077	1,520,002	1,865,789
United Kingdom ...lbs.	3,267	3,656	4,492	3,915	139,730	141,510	92,131	86,340
Other countries ...lbs.	7,328	10,707	1,195	1,420	85,352	82,679	157,085	189,419
Casein or lactarene...lbs...dut.	1,650,392	224,361	1,206,361	157,075	23,250,633	2,985,483	26,716,468	3,452,118
Kaolin, china, and paper clay...tons..dut.	21,932	212,930	17,772	197,084	274,587	2,666,414	237,915	2,529,067

(*Continued on page 50*)



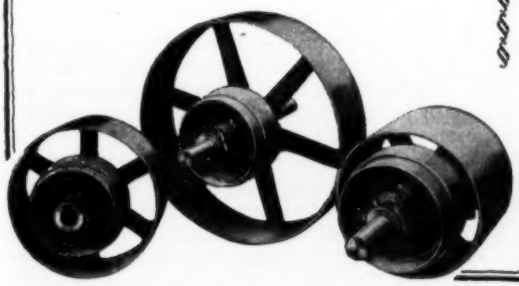
"M & W" Friction Clutches

These clutches have one point of adjustment and pick up the load gradually from rest

For a large size paper machine drive "Moore & White" High-Speed Friction Clutches were selected

Six 17" size *Three 21" size*
with 3 bronze friction discs

All types of "M & W" Friction Clutches are guaranteed trouble-free and are sold on a user-be-satisfied basis



PAPER machines are in continuous operation night and day and the drives must be free from trouble at all times. . . . they must be kept lubricated in a manner to prevent lubrication troubles.

The Moore & White Co., pioneers in the Friction Clutch Industry, build a complete line of Friction Clutches best suited for every power application in use today.

The standard "M & W" Friction Clutch, with its long-familiar and much-copied design, is still in demand for moderate speeds and ordinary working conditions . . . but for high-speed installations, Mechanical or Electrical Drives, a different type of "M & W" Friction Clutch is recommended.

When it is desired to make an installation requiring lubrication only once or twice a year, a De Luxe type of "M & W" Friction Clutch is recommended.

FURTHER INFORMATION UPON REQUEST

The MOORE & WHITE CO.
PHILADELPHIA, PA.
N. PHILA. STA. PENNA. R.R.
PAPER MILL MACHINERY

"Friction Clutch Manufacturers for 44 Years"

PAPER AND PAPER STOCK IMPORTS AND EXPORTS OF THE UNITED STATES

(*Continued from page 48*)

EXPORTS—PAPER

	November 1927 Quantity	November 1927 Value	November 1928 Quantity	November 1928 Value	Eleven Months Ending November 30 1927 Quantity	Eleven Months Ending November 30 1927 Value	Eleven Months Ending November 30 1928 Quantity	Eleven Months Ending November 30 1928 Value
Paper and Manufactures (total)	.....	$2,346,389	.....	$2,885,976	.....	$24,714,306	.....	$28,235,434
Printing paper—								
News print paper ....lbs.	1,693,039	82,653	2,863,269	106,066	23,587,099	1,125,938	21,454,106	813,672
Exported to—								
Canada ....lbs.	155,997	9,896	27,841	1,799	2,966,911	185,846	194,956	8,105
Central America ....lbs.	132,754	4,988	167,208	6,013	720,218	35,861	1,115,028	39,310
Cuba ....lbs.	249,549	12,432	368,483	13,200	4,381,816	203,836	3,582,797	132,279
South America ....lbs.	309,921	13,920	674,567	28,196	5,700,729	247,514	5,322,004	204,194
China, Hong Kong, and Kwantung...lbs.	46,969	2,504	934,408	31,095	382,793	23,133	2,604,303	94,816
Philippine Islands ....lbs.	665,630	32,057	649,672	24,110	7,273,679	306,062	7,293,462	284,420
Other countries ....lbs.	132,219	6,856	41,090	1,653	2,160,953	123,686	1,341,556	50,548
Book paper, not coated ....lbs.	1,135,014	97,976	2,131,757	147,339	14,435,526	1,251,357	21,794,895	1,600,877
Exported to—								
Europe ....lbs.	280,380	21,449	106,813	11,381	1,370,061	119,223	526,959	55,166
Canada ....lbs.	216,781	18,603	663,403	41,298	3,574,287	286,466	7,935,370	480,020
Mexico ....lbs.	13,167	1,597	91,407	7,651	476,778	50,541	477,911	53,148
Cuba ....lbs.	248,057	23,082	535,362	36,064	2,456,899	211,769	4,410,066	320,874
Argentina ....lbs.	95,615	7,586	11,118	1,155	810,531	65,628	519,946	48,223
Other South America....lbs.	92,534	6,877	81,395	6,306	1,690,956	145,174	1,131,603	94,915
China, Hong Kong, and Kwantung...lbs.	5,870	795	95,678	6,798	386,075	43,227	1,802,918	145,011
Philippine Islands ....lbs.	57,912	4,364	410,976	23,850	1,792,891	138,942	2,441,336	159,984
Australia ....lbs.	64,215	7,440	37,157	4,375	794,363	85,645	888,636	106,877
Other countries ....lbs.	60,483	6,183	98,448	8,461	1,082,685	104,742	1,660,150	136,659
Cover paper ....lbs.	181,165	26,618	192,962	28,253	1,535,296	262,307	1,869,188	311,684
Grease-proof and waterproof paper....lbs.	154,783	27,001	210,151	47,237	2,484,530	356,326	2,883,809	451,575
Wrapping paper ....lbs.	3,547,698	210,905	3,743,718	257,634	28,825,488	2,042,472	33,208,872	2,349,069
Surface-coated paper ....lbs.	457,561	56,783	828,834	86,366	5,565,149	706,532	9,792,059	1,014,889
Tissue and crepe paper....lbs.	392,428	106,198	335,091	79,324	4,279,903	981,061	4,631,870	1,013,491
Toilet paper ....lbs.	509,414	57,260	550,476	51,643	4,940,619	601,589	5,927,024	628,506
Paper towels and napkins....lbs.	197,869	26,217	199,695	37,812	2,180,453	302,617	2,750,077	363,760
Box board ....lbs.	3,763,459	127,032	2,805,942	83,595	40,869,056	1,267,245	46,213,250	1,288,800
Bristols and bristol board....lbs.	79,783	10,468	134,328	17,614	1,677,588	160,059	1,725,604	197,109
Other paper board and straw board....lbs.	2,430,453	129,789	3,663,446	154,304	36,124,171	1,949,105	39,375,720	2,004,686
Sheathing and building paper....lbs.	1,062,974	40,397	1,943,732	72,674	11,608,982	459,845	13,232,540	492,865
Wall board of paper or pulp....sq. ft.	2,905,576	100,042	8,155,413	273,375	42,375,868	1,388,837	55,347,608	1,866,924
Blotting paper ....lbs.	358,909	37,727	433,510	44,826	3,194,419	360,012	3,627,974	411,160
Filing folders, index cards, and other office forms ....lbs.	60,719	28,721	149,042	47,931	955,963	284,772	1,415,921	477,892
Papeteries (fancy writing paper)....lbs.	69,029	19,249	70,785	18,595	680,224	177,553	719,123	185,941
Other writing paper....lbs.	1,417,618	200,621	2,969,807	338,640	11,620,694	1,713,008	23,147,543	2,577,551
Paper hangings (wall paper)....yds.	2,383,741	48,142	2,046,798	49,311	26,357,478	555,214	31,857,930	606,664
Paper bags ....lbs.	847,070	74,486	1,073,750	85,597	10,392,054	896,127	8,216,035	724,626
Boxes and cartons....lbs.	2,104,960	151,913	3,420,796	226,819	21,881,908	1,483,064	26,024,541	1,747,926
Envelopes ....lbs.	193,203	31,696	224,174	38,507	2,292,685	384,456	2,263,538	371,018
Vulcanized fiber sheets, strips, rods, and tubes..lbs.	367,197	105,085	500,982	114,810	3,918,125	1,162,639	5,022,343	1,301,544
Manufactures of vulcanized and indurated fiber..lbs.	37,538	13,463	31,067	6,145	472,790	141,349	451,024	129,899
Cash-register and adding-machine paper.....lbs.	173,794	17,606	258,817	31,193	1,958,166	197,588	3,147,783	329,989
Other paper and paper products.......	.....	518,341	.....	440,366	.....	4,503,234	.....	4,973,317

WOOD PULP AND PAPER STOCK

Sulphite wood pulp ....tons	2,866	123,736	1,610	114,106	21,229	1,130,953	19,052	1,095,929
Soda wood pulp ....tons	317	26,990	305	25,707	2,005	175,026	2,301	182,951
Other wood pulp....tons	84	4,617	1,611	66,357	2,148	86,151	4,441	230,743
Rags and other paper stock....lbs.	18,095,257	249,723	16,004,177	239,364	198,566,653	2,985,367	211,874,664	3,836,609

PAPER AND PULP MILL MACHINERY

Paper and pulp mill machinery....lbs.	961,143	268,386	1,090,478	289,418	17,765,859	3,490,585	13,410,245	2,859,897

Cellophane Sales Changes

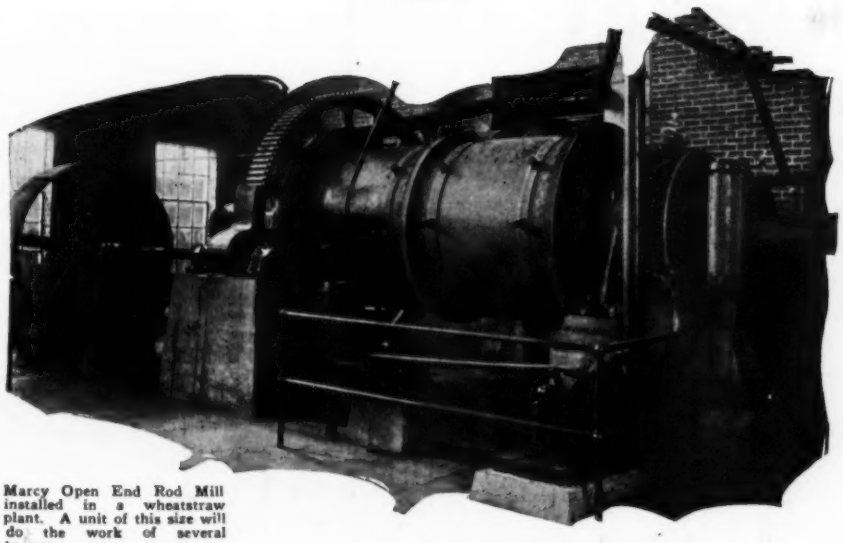
The Du Pont Cellophane Company has announced the appointment of J. G. Jorgensen as assistant district sales manager of the eastern metropolitan area. Mr. Jorgensen has been in the field in Brooklyn, New Jersey and Northern New York State. Previous to that, he covered many of the larger cities helping to introduce cellophane to manufacturers of package goods when the du Pont Company first took over the American manufacturing and sales rights a few years ago.

E. K. Graves has been assigned to the company's outside sales force, with headquarters at the New York office at 2 Park avenue. Mr. Graves spent two years in the company office as head of the Package Development Service. He will now cover the State of Connecticut and the northern part of New York State, the territory formerly covered by Mr. Jorgensen.

William Rheaume has been added to the outside sales force of the Chicago district office of the company. He will make his headquarters in the Chicago office at 120 South LaSalle street, and will cover the major parts of Michigan, Indiana, part of Kentucky and all of Illinois except Chicago proper.

Will Protect Pulpwood Interests

Known briefly as the "Pulpwood Supply Act" an exceedingly important piece of legislation made its appearance in the Ontario Legislature this week. Under the bill, which was introduced by the Minister of Lands and Forests, the Government seeks to establish a perpetual supply of pulp for the manufacture of news print in Ontario. Under the provisions of the bill the Department will establish a check on the pulpwood consumption of the province and, after a general survey, take steps to place the industry on a sustained yield basis. The measure provides that companies must submit to the Government detailed statements showing not only their financial position but the pulp holdings that they now have under control, and the amount of pulp used from 1917 to 1928 inclusive. On receipt of these statements the Government will study them individually and submit them to the Forestry Board with the idea of devising some plan to place the pulpwood supply of the province on a sustained yield basis. If it is considered necessary the province will be divided into sections for the working out of the plan. The bill grants the right to the minister to control cutting rights in any form.



Marcy Open End Rod Mill installed in a wheatstraw plant. A unit of this size will do the work of several beaters.

Rod Mill Practice

----definitely shown to provide better fibers and more uniform pulp with less power

A CERTAIN plant operating two Marcy *Open End* Rod Mills recently ordered a third mill, this time for beating rags.

Obviously, if the first two units had not proven their value for beating pulp, this company would not have ordered a third unit.

That the fibers were better and stronger was evidenced by the immediate elimination of practically all machine breakage.

That the pulp was more uniform was evidenced by the even caliper they were able to obtain across the entire sheet.

Marcy *Open End* Rod Mills have definitely shown that rod mill practice is sound. Thoroughly investigate its advantages for your plant.

The MINE and SMELTER SUPPLY COMPANY

DENVER NEW YORK

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Vol. LXXXVIII New York, February 14, 1929 No. 7

COMING EVENTS

Fifty-second Anniversary of the American Paper and Pulp Association. Convention and Meeting of Affiliated Associations. Waldorf-Astoria Hotel, February 18-21. Annual Meeting, Thursday, February 21. Annual Banquet, Grand Ball Room, Thursday, February 21.

National Paper Trade Association of the United States. Convention, Waldorf-Astoria Hotel, February 18-20. Annual Banquet and Dance, Grand Ball Room, Roosevelt Hotel, Wednesday, February 20.

Technical Association of the Pulp and Paper Industry. Convention, Waldorf-Astoria Hotel, February 18-21. Annual Banquet, Hotel Commodore, Wednesday, February 20.

Salesmen's Association of the Paper Industry. Annual Meeting, Waldorf-Astoria Hotel, Tuesday, February 19. Luncheon, Tuesday, February 19.

New York Association of Dealers in Paper Mill Supplies. Annual Banquet, Hotel Commodore, Wednesday, February 20.

UTILIZATION OF FARM WASTES

The remarks of the Hon. William P. Holaday of Illinois in the House of Representatives at Washington last week on the series of newspaper articles written by Mr. Blair Coan on the utilization of farm wastes, read into the Congressional Record on January 7, last, by Senator Schall of Minnesota and made the basis of the Schall Bill to establish eight Government plants at a cost of $6,500,000 to demonstrate commercial possibilities of farm waste utilization, make interesting reading.

Mr. Holaday condemns this series of articles as wholly false and misleading.

He declares this series of articles to be "cowardly propaganda to hamstring an established commercial industry too sound economically and too popular as a measure of agricultural relief to be attacked openly." He quoted from letters received by him from Secretary of Agriculture Jardine and Director Burgess of the Bureau of Standards contradicting Mr. Coan's published statements ascribing to Government scientists the discovery and perfecting of chemical processes which, Congressman Holaday declared, "In reality have been perfected because citizens of my State and of Indiana, Wisconsin, Nebraska, Missouri, Kansas, Kentucky, New York, Connecticut and New Jersey have had the faith and courage to put more than $1,000,000 into this pioneering enterprise.

Mr. Holaday described the Cornstalk Products Company, at Danville, Ill., as pioneering in farm waste utilization and operating the only commercial plant in the world making paper pulp from cornstalks.

Although Senator Schall described Mr. Coan as a "well-known author and correspondent," the Illinois Congressman said he is "well-known, not as a Washington newspaper correspondent but rather a propagandist."

He referred to Mr. Coan's published charge that Washington correspondents have conspired to suppress information about "marvelous discoveries" by Government scientists—which were never made—and paid high tribute to the integrity and ability of Washington correspondents.

The obvious purpose of some of Mr. Coan's articles, said Mr. Holaday, was to make farmers believe they would receive fabulous prices for their cornstalks and straw if the Government built the plants and that private industry would be cheating them if it paid less. Mr. Coan published that the Bureau of Standards is paying farmers $12 an acre and that the alleged Government processes will make cornstalks worth $12 a ton to the farmer. Mr. Holaday quoted a Bureau of Standards letter stating that it paid last year only $7.50 a ton for cornstalks delivered at its experimental wallboard plant at Ames, Iowa.

Mr. Coan also published that the Bureau of Standards claimed to have a cornstalk paper pulp process "far superior" to that used at Danville, and that this process is "free to all who may want to use it"—notwithstanding the Bureau denies it has developed any such process.

Mr. Holaday called attention to the coincidence of Mr. Coan's "false and misleading propaganda" being given wide circulation "just at the time when private capital has made a conspicuously successful beginning and is preparing to expand," and of Mr. Coan's proposing to place competing Government plants where it was known the Cornstalk Products Company was preparing to build.

"Of course there will be no Government plants," Mr. Holaday continued. "Of course the Senate bill was dead before it left the hands of the one that inspired it"—and he cited Mr. Coan's published statement that his articles were the basis of the Minnesota Senator's proposal.

"But such propaganda," continued Mr. Holaday, "unless exposed, could easily arrest the flow of private capital into this industry and set back its development for many years. If this industry should be throttled now, it would retard the whole program of economic farm relief through the utilization of agricultural wastes —something which every member of this Congress and every farmer in the United States wishes to avoid."

"The movement to utilize farm wastes should and can stand on its own merits," Mr. Holaday concluded. The corporation at Danville, he said, is not seeking Government aid or subsidies, but "only desires not to be harassed by an attempt to subject it to Government competition based on the falsehoods that the Government has superior process and that private capital is afraid to venture into this field unless the Government first blazes the way."

POWER DEVELOPMENT IN NEW YORK

Paper manufacturing interests are sponsoring the St. Lawrence power development program which eventually will release 3,000,000 units of horse power and provide a system of locks to permit navigation on a greater scale between the Great Lakes and the Atlantic. Construction of six huge transmission lines, three lines through this section to connect with Central New York systems and three other lines on the other side of the Adirondacks to supply New England and south along the Hudson River, are

proposed. Steps have already been taken to rehabiliate the lumber, pulp and paper industries by the St. Regis Paper Company and the Delaware and Hudson Railroad in which work many communities, counties, sportsmen's associations, chambers of commerce, and the New York Development Association are participating. Reforestation already launched on a great scale together with the anticipated harnessing of the great power will restore and augument this section's position in the paper and lumber industries.

The railroads and the utility companies are joining with civic associations throughout the North Country in attracting other industries to this section. One reason advanced why Northern New York will receive huge industrial benefits is that the maximum distance over which power can be transmitted economically is 400 miles so the electricity developed along the St. Lawrence will be used mainly in Northern and Central New York permitting power already developed by systems in those sections, including the surplus above local needs at Niagara Falls, to be transmitted southwards. The Senate Foreign Relations Committee will shortly consider a treaty between the United States and Great Britain permitting the diversion of an additional 20,000 cubic feet a second of water for power production at Niagara Falls between October and April of each year, one-half to be diverted within this state and one-half within the Province of Ontario. It is expected that this will be followed by negotiations for St. Lawrence River power and navigation development. A committee to negotiate a treaty is expected to be appointed by Mr. Hoover directly after his inauguration.

Water power conferences with Governor Roosevelt are scheduled during this month. Illness of the governor and his son's more serious illness prevented such conferences during the latter part of January. Republican and Democratic leaders will attend and the St. Lawrence River project only will be discussed. A fixed state policy will be determined. The questions to be decided are whether the power will be developed under state or private auspices and whether the power will be distributed at cost, that is to say at no excessive profit to the distributors.

Strong pressure is being brought on the governor and likewise on Republican leaders to settle these issues. Especially interested are paper manufacturers in all sections of Northern New York who have stated that failure on part of the state to harness the St. Lawrence within a reasonable time would result in a wholesale migration of industry to other parts of the country where cheaper power is now available.

An Interesting View on News Print in Canada

[FROM OUR REGULAR CORRESPONDENT]

MONTREAL, Que., February 11, 1929.—*The Montreal Star,* which is one of the most powerful papers in Canada, and which is owned by Lord Atholstan, has come out with a highly alarmist editorial on the news print situation in Canada. It charges that the present crisis was deliberately engineered by American financiers whose sole aim had been to get a strangle-hold on the industry by freezing out the Canadians and spoiling them of their heritage. It is interesting to note that Lord Atholstan is generally supposed to hold the controlling interest in one news print company in this Province. The editorial, which has created quite a sensation here, and which is likely to have some interesting echoes in the political field, is as follows:

"The silence which surrounds the negotiations over the news print situation is depressing and suspicious. Conference after conference is held and guarded statements are issued to the public, but the net result is that the situation is identically the same as it was three months ago.

"If it was merely a squabble between rival manufacturers of news print it might seem a wise course to let the men fight it out among themselves. The quarrel however cuts far deeper into the national life than this. It is not only that millions of dollars are invested in the news print industry and that hundreds of thousands of shares are held by Canadians, but news print is the main product of our forests and Canada cannot allow control of her natural resources to fall into alien hands.

"Not only would Canadian shareholders lose thousands of dollars if the disaster which now threatens the news print industry was to become actual, but whole municipalities which have been built on this industry and developed to provide labor for its manufacture would be wiped out as surely as if they had come under the barrage of heavy guns on a war front. What would become of Port Alfred and Grand 'Mere and Donnacona and Dolbeau if the manufacturers were forced to shut down the plants established there? Would Three Rivers, Shawinigan Falls and Cap de la Madeleine be the thriving communal centers they are today if through the senseless and blind policy of the Quebec Government and the machinations of those foreign corporations who have set out to purchase control of a great Canadian industry no more paper was manufactured at these places.

"What about the employees who would be thrown out of work and how would their families fare? What about the skilled men who have learned their craft through years of patient toil. Would they be able to readjust themselves readily to a new environment and is the labor market in such a condition today that it would welcome the opportunity of absorbing several thousands into other industries. Already this looming shadow of unemployment and the want and suffering it brings in its train has cast a dark shadow over the trim and tidy streets and spaces of these garden cities.

"Mills shut down would not reopen readily. In fact if the stoppage of work was too long-drawn-out the doors might never be unlocked again. Such a plant depreciates rapidly and while news print manufacturers may be willing to keep their mills open for some months, even at a loss, such an uneconomical condition could not be continued indefinitely.

"The reason for the present situation is over-expansion of the industry and for this the Quebec Government must bear the major part of the blame. Year after year the authorities at Quebec were warned against the policy it adopted and followed deliberately of expanding the news print industry by the simple expedient of licensing anyone who had the money for the timber and for extravagant costs which surround the organization of the new companies. On they went recklessly defying all the danger signals held out before them until they had licensed production of more paper than the world could consume.

"It was at this point that shrewd American financiers took a hand in the game. They took stock of the situation and judged they held the trump cards. They took their courage in their hands and deliberately precipitated a crisis which amazed the smaller manufacturers and forced the issue. The negotiations and the squabbles of the news print men that have been going on for the last three months have revealed one truth that—

"The news print industry is up against a crisis that is so serious that the whole economic life of this and other provinces is threatened with a crushing blow from which recovery will be slow and painful if it comes to an open break.

"Mill owners who have not millions of reserves will sooner or later be brought to a realization that they have been made the tools of upscrupulous alien manipulators whose sole aim it has been to get a strangle-hold on the industry by freezing out the Canadians and spoiling them of their heritage.

"That disaster is far nearer than most people imagine and a masterly policy of inactivity is pursued by Quebec.

"The Quebec Government is responsible for this shameful condition and they alone can rescue the industry before it is engulfed."

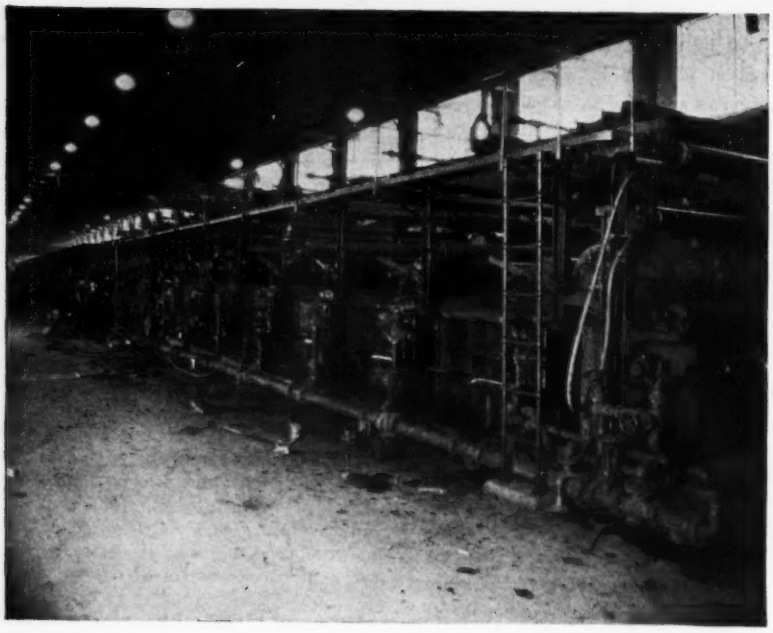

Photo shows a new 7 cylinder 132" board machine in a modern mill in the Middle West. This machine is equipped with 7 Goodrich Vulcalock couch rolls.

Far greater resistance to edge wear in these couch rolls

THE VULCALOCK couch roll is much tougher and has far superior resistance to edge wear than the ordinary couch roll because of the special process by which it is made.

This process—the Vulcalock Process—is an exclusive technique, developed by Goodrich, of joining rubber to metal by an inseparable bond — a bond as strong as the rubber itself. An adhesion of 500 pounds to the square inch is produced by the Vulcalock Process.

As a result, Vulcalock couch rolls are made without a hard rubber base and it is possible to effect a cure which gives a uniformly soft density to the entire cover, right to the metal core.

The rubber cover of a Vulcalock couch roll can be used until the rubber is worn down close to the core.

Aeroboard head box linings protect quality of the paper

Superior to African mahogany, cypress or other wood lining because Aeroboard does not accumulate slime and dirt. "Slugs" and imperfections in the sheet are substantially reduced. Head boxes lined with Aeroboard can be quickly hosed out waile felts are being washed. Any good millwright can apply Aeroboard in your own plant by following our easy instructions. The box can be made absolutely waterproof. Send for details.

Check List of Goodrich Products used in the Paper Industry: Vulcalock couch, worm, and press rolls ' Highflex belting ' Rubber lined pipe and fittings ' Fire, water, air and steam hose ' Cutless rubber bearings, rubber lined tanks, screen diaphragms, gaskets, packing ' Flexite buckets and dippers.

Many prominent mills have already discovered the remarkable economy and efficiency of Vulcalock couch rolls and are ordering them to supplant old-type rubber rolls, as well as felt rolls. Vulcalock rolls will pay for themselves against any other type of roll made.

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Section of the
Technical Association of the Pulp and Paper Industry

AN ORGANIZATION FOR THE ENCOURAGEMENT OF ORIGINAL INVESTIGATION AND RESEARCH WORK IN MILL ENGINEERING AND THE CHEMISTRY OF PAPER, CELLULOSE AND PAPER-MAKING FIBERS GENERALLY; IT AIMS TO PROVIDE MEANS FOR THE INTERCHANGE OF IDEAS AMONG ITS MEMBERS IN ORDER THAT PROCESSES OF MANUFACTURE MAY BE MADE MORE EFFICIENT AND IMPROVED ALONG TECHNICAL LINES.

Edited by
RONALD G. MACDONALD, Secretary

A Natural System for the Analysis and Classification of Paper

By A. S. Hammond [1]

Any test that increases our knowledge of paper is of value; and its value is proportional to its simplicity. Furthermore, when a simple test reaches down into some of the intangible characteristics of paper and gives us a better understanding of the effects produced by calendering and "hydration" it becomes of universal interest. If also the simple test is of widespread application, the question naturally arises as to whether this might not provide a system for classifying paper.

The method described in this article is directly applicable to paper which contains only a small percentage of extraneous matter such as loading. In general such papers fall into the "coarse" classification. It is with this that most of the author's work has been done. With modifications the method might be made to include a much greater range.

The unit from which paper is built is the fiber. This fibrous origin impresses a certain similarity upon all paper in that the paper structure is discontinuous. There are spaces within and between the individual fibers. In general these spaces are intercommunicating. We might then think of paper as a sheet of more or less pure cellulose having various degrees of density and porosity.

On account of this porosity the papers have certain powers of absorption. If the fluid absorbed has no physical or chemical effect on the paper, the amount of the fluid absorbed gives us a measure of the porosity of the paper. The penetrating paraffin oils are excellent for an absorption medium.

Knowing the weight and specific gravity of the oil absorbed we may readily calculate the space it occupies in the paper. The volume of the paper may be calculated from its surface dimensions and caliper. Dividing the volume of the space occupied by the oil by the volume of the paper and multiplying by 100, we obtain the percentage of apparent voids in the paper.

The apparent density of the fiber substances of the paper is another valuable datum. This is obtained by dividing the weight of the paper by the volume of the fibers, this volume being the volume of the paper less the volume of the voids.

The author has made many hundreds of tests and all the evidence obtainable indicates that a paraffin oil will not pass through a continuous sheet of cellulose. The fiber walls are, for the greater part, continuous cellulose. As used in paper the fiber walls may, or may not be ruptured. They may have bordered pits. When these do occur they are usually near the ends of the fiber. Obviously then the paper may contain among its fibers certain ones that contain air spaces that do not communicate with other spaces or the general pore system. Considered as a unit, such a fiber with its enclosed air space will have a lower density than cellulose.

For this reason we should expect certain classes of paper to show a lower value of apparent density of fibers than would others. By this absorption method we do find such a difference, viz: papers made of hard cooked fibers as contrasted to those made of soft cooked fibers and those made of unbleached as contrasted to bleached fibers.

Bulk Index

Data obtained in this manner have been plotted in various combinations. The simplest and most useful of these is given in chart No. 1. The abscissa has been labeled "Bulk Index" or points per pound. To the author the former seems to better describe the caliper of a paper of a given base weight, especially with reference to its porous character.

The values of Bulk Index and Apparent Voids for a few representative papers are entered on this chart. For reasons to appear later, the papers selected all have about the same base weight, the range being approximately from 20 to 30 pounds.

Referring to this chart it is seen that the coarser and harsher papers lie in the lower sectors, while the softer and finer papers lie in higher sectors. India paper is in the highest sector between the lines 1.4 and 1.6.

The lines defining the sectors slope down and to the right, and at their focus is found Glassine and Cellophane. Near the focus are found papers of varying degrees of grease proofness. Those nearest the focus have the highest degree of grease proofness.

Thus we have a simple and natural picture of paper. Many readers could indicate the approximate location for the values of papers known to them without even testing the paper.

Before passing on from this chart it might be well to explain that the numbers labeled "H-Factor" at the ends of the sloping lines are the values for the tangent of the angle between that line and the line of zero voids.

The chart above does not stand as an isolated picture of paper. It may be brought into correlation with the actual making of paper. To show how this may be done it will be in order to define two laws that have, per se, forced themselves to the front.

[1] Western Waxed Paper Co., North Portland, Ore.

First it should be explained that the term gelatinization is used to cover all of the so-called "hydration" effects whether they be produced by the mechanical processes of beating and calendering, or through chemical reactions, or through combinations of the two.

The Bulk Index of cellophane is about 0.45. This Bulk Index is taken as the lowest possible one for a sheet of cellulose. Relative Bulk Index as used below is then the Bulk Index of the paper under consideration less the Bulk Index of cellophane.

Law No. 1

In the gelatinization of paper fibers the percentage of apparent voids in the sheet made of these fibers progressively decreases; and this decrease is at a constant ratio to the relative Bulk Index of the finished sheet.

This ratio, here called the "H-Factor," varies according to the characteristics of the fibers used in the furnish.

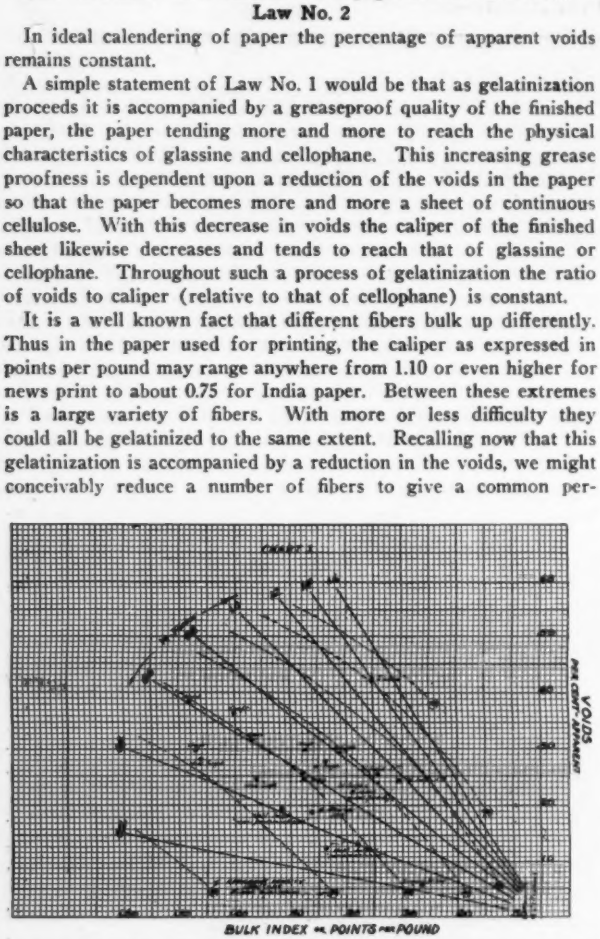
The "H-Factor" is a constant for any given kind of a fiber.

Law No. 2

In ideal calendering of paper the percentage of apparent voids remains constant.

A simple statement of Law No. 1 would be that as gelatinization proceeds it is accompanied by a greaseproof quality of the finished paper, the paper tending more and more to reach the physical characteristics of glassine and cellophane. This increasing grease proofness is dependent upon a reduction of the voids in the paper so that the paper becomes more and more a sheet of continuous cellulose. With this decrease in voids the caliper of the finished sheet likewise decreases and tends to reach that of glassine or cellophane. Throughout such a process of gelatinization the ratio of voids to caliper (relative to that of cellophane) is constant.

It is a well known fact that different fibers bulk up differently. Thus in the paper used for printing, the caliper as expressed in points per pound may range anywhere from 1.10 or even higher for news print to about 0.75 for India paper. Between these extremes is a large variety of fibers. With more or less difficulty they could all be gelatinized to the same extent. Recalling now that this gelatinization is accompanied by a reduction in the voids, we might conceivably reduce a number of fibers to give a common per-



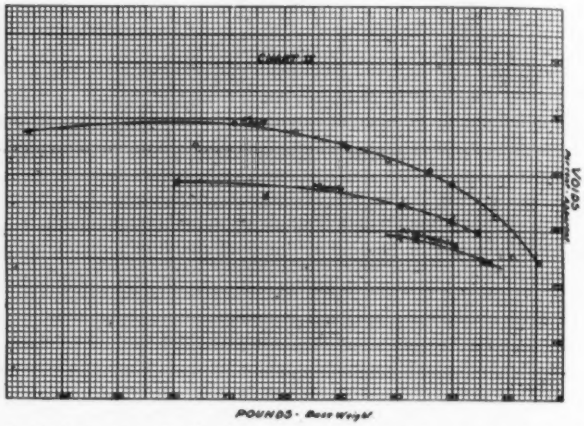
centage of voids. The caliper of sheets of the same base weight made from these fibers might be used as a system for classifying the fibers. However, it is found that the rate at which the voids decrease with respect to the caliper is constant. So then we can obtain the percentage of voids and the caliper at any point in the gelatinization process, and the ratio as derived above becomes a characteristic of the fiber. This ratio is called the "H-Factor."

The first thought that naturally comes to one familiar with paper fabrication is that the caliper of paper is largely dependent upon calendering.

Law No. 2 states that in ideal calendering the percentage of apparent voids is a constant. Ideal calendering is here taken to mean calendering in which the fibers are neither crushed or gelatinized. A crushing of the fibers always increases the voids and at the same time decreases the strength of the paper. When calendered under conditions of excess moisture and pressure paper fibers become gelatinized. The voids in such a sheet are decreased. The strength may be either increased or decreased. Both crushing and gelatinization are sometimes apparent on a paper machine at the same time. The web may have gelatinized fibers at the deckles and crushed fibers at the center. The determination of such an irregular condition will be outlined below.

Hydration and Gelatinization

By the aid of these two laws has been effected a divorce of



calendering from "hydration." Henceforth they are to go their own ways. "Hydration," or better gelatinization, follows a sloping path toward cellophane or glassine. Calendering follows a horizontal path on some level of constant voids. We must now observe to what extent the values assigned may, in actual practice, deviate from a constant straight line.

In presenting Chart 1 it was remarked that the points represented papers all having about the same base weights. The reason for this will be obvious from an inspection of Chart 2. Where the percentage of apparent voids is plotted against the base weights for several series of papers. It is seen that all of the papers show an increase of voids with increase of base weight. The probable reason for this is two fold. In light weight papers the fibers lie in all directions but in planes that are parallel. In heavy papers many fibers pass from one plane to another. Due to the lack of parallelism of the fibers in the heavier papers, a certain percentage will be disposed in the sheet with their longitudinal axis more or less perpendicular to the surface of the paper. In such a position, restricted as they are against flexing laterally, they are easily crumpled and crushed. This increases the voids and decreases the strength. (Of course the lack of parallelism is of itself a cause leading to a lower percentage test.) The other reason is a higher retention of fiber fragments in the heavy weight than in the light weight papers. It is evident that if we replace, weight for weight, an undamaged fiber by a number of broken pieces of fiber, the spaces into which the penetrating oil may go are increased. It is the apparent voids that we measure. The amount of oil absorbed then bears a direct relationship to the aggregate of tiny surfaces exposed by the fibers. Neglecting for the moment the internal spaces that may be opened by the transverse breaking of a fiber, we find that for each break we develop two new surfaces. The limiting factor in the increase of voids with the breaking up of fibers, or the retention of an equivalent weight of fragments, would seem to be the size of these fragments. When a considerable percentage of very small fragments are formed in a sheet it is reasonable to believe that they would pack so closely together that oil would be excluded.

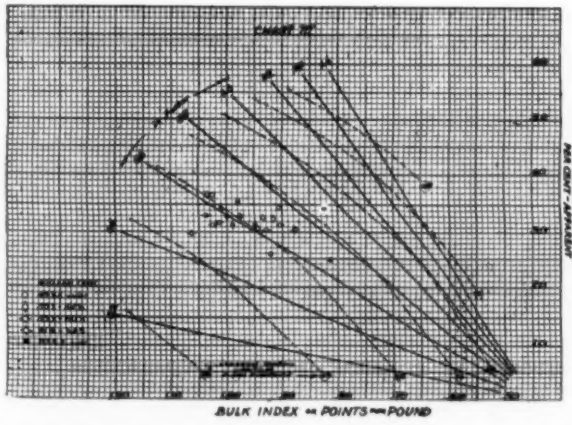
Comparison of Papers

The reader will readily see that in order to compare papers made from different fibers, either the samples tested must have

the same basis weight or a correction must be made to allow for the variation of voids with base weight. It will be remembered that the H-Factor gives the fiber or paper characteristic. This depends on the Bulk Index as well as the voids. In general the Bulk Index of heavy base weight paper is lower than that of light base weight paper. Hence in comparing samples of different weights the variation in Bulk Index must be taken into account. For these reasons it is more satisfactory to make comparisons with tests on papers of the same base weights.

It was stated above that the H-Factor lines were the paths for gelatinization. As evidenced in ball mill and beater tests, bursting strength is developed within certain limits as gelatinization progresses. If the system here presented is to bear the light of practical experience we should expect bursting strength to develop along the H-Factor lines. Chart 3 shows this to be the case. The points on Chart 3 represent the characteristics of all the samples taken from a shipment of 20 pounds bleached sulphite. This shipment proved defective in the conversion plant. That is why it was analyzed. The wildness apparent here represents very poor control and there is a much greater spread than would occur in testing a satisfactory shipment. Usually paper of this weight can be controlled within 5 per cent of voids and within about 0.1 of H-Factor. Tests of a good shipment of paper of this class would be expected to fall within the range,—H-Factor 0.6 to 0.7 and voids 29 per cent to 34 per cent.

By consulting the legend it will be seen that all the points above 34 per cent voids are for paper giving less than 50 per cent Mullen test. There is a progressive increase in bursting strength as the points are followed down toward the focus. This is particularly striking for the sector between the lines 0.6—0.8 where the maximum of test is reached at about 30 per cent voids. The point just below 25 per cent voids is for paper of a later shipment. Here the Mullen test was 66 per cent. All the rest of the points are for paper of one shipment which was manufactured inside of one week's time. It was made on two paper machines; but the machines show no distinctive differences.



As will appear later, the group of points below H-Factor 0.6 at 32 per cent voids might represent a stock that had been insufficiently calendered. The somewhat higher Mullen test of this group might point to this as a cause. (As an actual matter of fact there was no appreciable difference in the finish of this group as compared with the group to the right.) However, there are two telltales on this chart, the high test points below H-Factor 0.6.

The author's experience in handling this method would indicate that there is practically no chance of the high test paper represented by the two points below H-Factor 0.6 having been derived from the same furnish as those above. In all probability they are the result of a harder cook or a coarser ultimate fiber. As this mill uses a furnish consisting of fibers from two different woods, the probability is that the wildness apparent on this chart is due to a variation in the percentage of the two different fibers going into the furnish. The points of low H-Factor would represent a preponderance of coarse fibers and those at high H-Factor an overbalancing by the finer fibers.

Effect of Calendering

The calendering of papers induces several possible changes. The main tendency of all calendering is to reduce the caliper of the sheet without changing the percentage of apparent voids. Usually there is some deviation from this straight line. An illustration or two will give the reader an idea as to what should be expected under ordinary conditions.

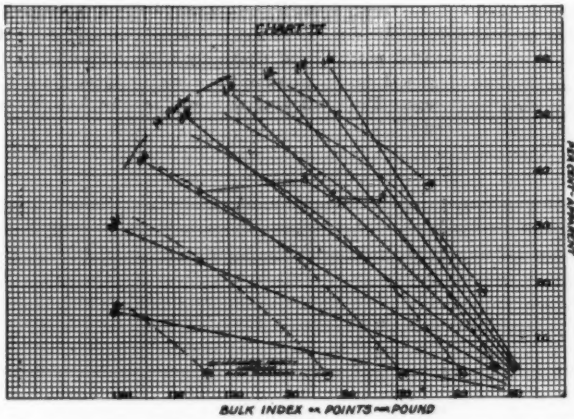


Chart 4 is a calendering curve for a 90 pound envelope Manila. The paper machine on which this was made is equipped with three calender stacks. Water was applied to the web at the bottom of the first stack. The table below gives the tensile strength for each of the points as numbered on the chart. For comparison the readings of the Schopper rapid tensile tester were divided by the base weight of the paper.

Point where taken	Tensile test with grain	Tensile test cross grain
(1) Between drier and 1st stack	0.252	0.020
(2) Between 1st stack and 2nd stack	0.238	0.018
(3) Between 2nd stack and 3rd stack	0.262	0.020
(4) Between 3rd stack and reel	0.243	0.019

Referring back to the discussion of calendering, we find indications of crushing on this curve, an increase in voids, which is checked by the decrease in tensile strength. This is shown at 2. Before entering the 2nd calender stack the web was moistened at the bottom of the 1st stack; hence the point at 3 shows a depression, and the line 2—3 gives the gelatinizing effect of calendering with excess moisture. From 3—4 we have an example of ideal calendering. The loss in strength between 3 and 4 as shown by the table would indicate a crushing of the fibers which in turn should give an increase in voids. In this particular case any tendency for the voids to increase evidently has been offset by an equivalent gelatinization, the web having been calendered while still rather moist. Whether or not the gelatinization is accompanied by an increase in test will depend on the amount of calendering done at any particular stage and the history of the paper up to that stage.

The illustration given above is for a heavy weight envelope manila. The furnish for such a paper is so balanced as to give a sheet that will take a heavy calendering without too great a loss in strength. If each of the different kinds of fibers of this furnish were made into sheets of the same weight and calendered in the same way they would show entirely different curves on the chart. As a general rule it may be stated that hard cooked and unbleached fibers will not calender as well as soft cooked and bleached fibers. Thus a hard unbleached sulphite with a maximum ball mill test of 93 per cent dropped in test to 61 per cent, while a soft cooked unbleached sulphite with a maximum ball mill test of 85 per cent dropped only to 75 per cent with the same calendering. The 20-pound paper of the hard sulphite showed 8 per cent more voids

than the 20-pound of the soft cooked, thus reversing their normal positions.

Applications of Method

Actual use of this method of analysis indicates a number of possible uses for it.

CLASSIFICATION. The first thing that naturally comes to mind is that it furnishes a very good basis for a natural system of paper classification. It seems to seek out those elusive and intangible characteristics which might be called the very soul of the paper. If in addition to the ordinary specifications of strength, color, finish, etc., we add two numbers, one to express the H-Factor and one for apparent voids, the specifications seem to be definitely fixed. The author's experience has been that with other things equal two papers of the same H-V characteristic behave identically. They will have the same feel and in general the same look through. They will have the same texture, being coarse or fine. They will have the same softness for folding or, if you wish, the same stiffness for some other purpose. They will have the same absorption or grease proofness. In effect they appear to be identical.

ANALYSIS OF FIBERS. It should be possible to apply this method to hand made sheets for the purpose of analyzing and grading fibers. Thus fibers from different sources could be put on an equable basis for comparison. For this purpose light weight sheets, say 20 to 30 pound base weight, should be made and given a good surface finish. Samples have not been available to the author.

ANALYSIS OF PAPER. Analyses are ordinarily made for either of two purposes: (1) Analysis of a sample with a view to duplication. (2) Analysis of faulty paper to locate the cause of complaint. The author can here state positively that this method has been successfully used for both of these purposes.

CONTROL OF PAPER MILL RUNS. After specifications have been established they may be translated to mill terms by an inversion. Thus after the test, caliper, and so forth, have been fixed; in order to get a certain percentage of voids, the sheet is run free or closed up to obtain a certain oil absorption. Here it should be stated that the absorption-time curve of different papers varies considerably. Compact, soft papers reach their full absorption much more slowly than do papers with hard or greaseproof characteristics. Also heavy papers may require eight or ten hours or even a greater time to reach their ultimate absorption. For each class and weight there is a definite relation between a short time test and one for ultimate absorption; so that an immersion of only two minutes, if carefully made will give a good basis for control. Such short time tests should always be checked by ultimate absorption tests. It is upon the latter that the H-Factor and voids are based.

ESTABLISH NATURAL SPECIFICATIONS FOR MILL PRODUCTS. For each fiber and each weight of paper made from this fiber there are certain fixed limits outside of which it should not be used. When used beyond its natural limits of calendering or gelatinization such a fiber is uneconomical and might better be replaced by some other fiber. Also certain desired characteristics are unattainable with a certain kind of fiber but might easily be obtained by using others. By testing and recording a fair number of samples of mill products from a certain kind of fiber the normal working range could be established. The production of a paper outside of this range would call for the development of a different fiber, possibly from the same wood through different cooking.

ANALYZE MILL VARIATIONS. It was noted above that there may be a variation in the characteristics across the web coming from the paper machine. This variation may be intelligently followed by this method, as it gives a good indication of the cause underlying such variation. It should be remembered that all of the characteristics will vary along with the H-V. For this reason Mullen and such tests should be taken as near as possible to the H-V test pieces. Thus if a 4 by 4 inch sample be taken at any place for the H-V test, five Mullen tests could be made near the hole left, three on one side and two on the other side in the machine direction and as close as possible to the hole.

Method of Making the H-V Test

The utility of any test depends greatly on its simplicity. The simple technique given below may appear to be extremely crude at first glance, but actual use of it will induce considerable respect. Quite inconsiderable differences may be detected by means of it. Its accuracy is well within the limits of variation of the ordinary paper mill run, or even the usual paper machine web. As with all paper tests the moisture content should be for a standard humidity and temperature. The results are affected by the amount of moisture in the sheet, though not to such an extent as are some of the other physical tests.

A 4 inch square sample is weighed on a small piece scale and the weight recorded to the nearest 1/10 of a pound. The caliper of the small sample is taken at five places, once in the center and once about half way out on each diagonal. An automatic micrometer reading to one ten-thousandths of an inch is best for papers having a good surface. In making tests on low finished paper, as from the drier, the author prefers an ordinary micrometer caliper since the rough surface does not have as much effect on the reading. When using such a micrometer caliper the pressure should be applied through the ratchet. In either case the caliper of a sheet is taken as an average of the five readings and recorded to the nearest one hundred-thousandth of an inch. The sample is then immersed in paraffin oil (Nujol is a good one) at room temperature for a predetermined time. Absorption-time curves of some representative papers gives the necessary time to obtain the ultimate absorption. As noted above, a short time test gives a fair indication for any particular kind of paper. Short time tests for different papers or for different base weights of the same paper do not give a good basis for comparison. At the end of the testing period the sample is lifted from the oil and the surface oil is scraped off. The back edge of a hack saw blade is convenient for this. The sample still retains free oil on its surface so it is placed between two pieces of some absorptive paper such as news print and the surface oil is blotted off. With ordinary paper four blottings remove the surface oil. If surface oil still remains it will show up as bright spots on the paper, and should be removed. In testing absorptive, bulky papers pressure should not be used to such an extent that it will compress the sample and squeeze out the oil. Also the sample should be weighed at once as it would lose some of its oil by capillary action if laid on a dry absorbent surface. Static is often induced by the blotting process. This causes difficulty in reading the paper scales. By laying the oiled sample on any metal surface this static may be discharged and the reading taken more accurately. As before the weight is recorded to the nearest 1/10 of a pound.

Calculation Formulae

We now have the following data:

(1) Air dry weight of paper
(2) Oiled weight of paper
(2) Caliper of paper.

The following formulas are based on testing with Nujol which has a specific gravity of 87.5 per cent at 70 deg.:

$$\text{Oil absorbed} = \text{Oil weight} - \text{Weight (air dry)}$$

$$\text{Absorption} = \frac{\text{Oil absorbed}}{\text{Weight (air dry)}}$$

$$\text{Bulk Index (air dry)} = \frac{\text{Caliper} \times 10{,}000}{\text{Weight (air dry)}}$$

$$\text{Voids (per cent apparent)} = \frac{\text{Oil absorbed}}{1.316 \times \text{Caliper} \times 100}$$

or

$$\text{Voids (per cent apparent)} = \frac{\text{Absorption} \times 100}{1.316 \times \text{Bulk index (air dry)}}$$

$$\text{Density (apparent of fiber substance)} = \frac{54.8 \text{ (density of Nujol)}}{1.316 \times \text{Bulk index (A.D.)} - \text{Absorption.}}$$

This method, which the author believes to be original with him, is offered as a tool, as yet hardly polished by use, which may find a variety of practical applications.

The Manufacture of Photographic Paper

By Joseph Rossman[1]

Photographic paper is made by coating paper with a photo sensitive composition usually consisting of a sensitized emulsion of silver salts. The paper usually employed in photography is of a porous and fibrous nature, and in being passed through the solutions that are employed in the production of the photographic image the picture loses its force and brilliancy in consequence of its sinking into the tissue of the paper. In order to avoid this, albumenized paper has been employed, and although the image does not sink into the tissue, there is an objectionable gloss and harshness to the picture. With the first-named paper the image is liable to fade and become discolored in consequence of the difficulty of entirely removing, by washing from the porous paper, the substances cause the picture to fade. With the albumenized or non-absorbent paper difficulty is experienced in applying colors, because they remain upon the surface of the paper, giving an objectionable harsh appearance. Patent 51,010, Nov. 21, 1865 prepares the surface of the paper by treating it with a solution of gelatinous materials and kaolin which penetrates the pores of the paper. The paper is then submitted to the action of an astringent such as alum which forms a desirable photographic surface not affected by the solutions employed in photography.

Barium Sulphate Coating

In order to make ordinary paper suitable for the purposes of the photographic industries they may also be coated with a suspension of sulphate of barium (blanc fixe) in gelatine, glue, casein or similar binders. This coating serves a double purpose. On the one hand it prevents the infiltration of the photographic emulsion (bromide of silver gelatine) into the fibre of the paper and on the other hand it protects the photographic emulsion against the action of impurities contained in the paper, which owing to their chemical action may have a disturbing effect upon the picture during the subsequent development. The treatment of the paper is carried out in the following manner. Pulverized heavy spar or precipitated sulphate of barium in the dry state or as a dough is mixed with a binding agent and this mixture is applied to the paper by means of a spreading machine.

A recent patent No. 1,504,150 discloses a process which consists in bringing together Barium-ions on the one hand and SO_4-ions on the other hand in the presence of a protective colloid and maturing the emulsion of sulphate of barium so produced in gelatine, preferably at higher temperatures, in order to obtain a certain size of grain. After this size of grain has been attained the maturing process is discontinued, the stiff mass is garnulated, washed and after re-melting applied to the raw paper, the protective colloid acting at the same time as binding medium. The following may serve as an example for the carrying out of the process: with a heated solution of 500 gr. chloride of barium in 10 litres of 20 per cent watery gelatine is mixed a solution of 300 gr. sulphate of ammonia in 2.5 litres of water and the mixture is allowed to mature at a raised temperature (approximately at 50 to 70 deg.) until a certain size of grain is obtained. The emulsion is allowed to stiffen, is then granulated according to the methods customary in the photographic industries and washed until the water produces no longer any chemical reaction upon the salts of conversion. The emulsion thus purified is melted and applied to the paper. To this mass may be added, as required, further quantities of gelatine or of another binding agent (glue, agar, casein or the like).

Coating Problems

The coating of paper with the sensitive emulsions has presented many difficulties. Many processes have been proposed for coating the paper. It has been floated on the surface of solutions of gelatine or albumen, and then hung up to dry. This makes the coating thin at one end of the sheet and thick at the other. It has been drawn over the surface of said solutions and then hung up to dry, but with the result just named. It has been floated, as before mentioned, and then placed with the coated side uppermost upon a flat disk, which an operator dexterously turns and tips in such a manner as to make the coating approximate to a uniform thickness. It has been made into a belt, arranged to pass over drums, so that the lower side of the paper would touch lightly the surface of the solution. And another method has been to first rub over a glass plate with gall, or with a mixture of nitric acid and alcohol, and then to pour the coating solution upon the plate, and before said solution became dry, the paper to be coated was gently pressed thereupon; and when dry, or nearly so, the paper, with the coating adhering thereunto, was removed from the plate. But each of such processes has been attended with difficulties and serious objections, for it is extremely difficult, if not impossible, by either of them to cover paper or other sheets with a coating of uniform thickness; and if the coating used for photographic purposes is not of uniform thickness the tone of pictures taken thereupon cannot be uniform throughout. In patent 62,256 by thoroughly saturating or dampening the paper, and then laying it on a level table, the upper surface of the paper will necessarily be level, and the coating fluid poured thereupon will distribute itself by gravity uniformly in thickness over the surface.

Many attempts have been made to manufacture photographic paper on a large scale instead of the older and slower processes which as previously stated consisted in laying the sensitized material on the paper with brushes or the more common method of passing a strip of paper around rollers, uniting the ends of the strips to form an endless band, and by rotation of the rollers causing the band to travel in contact with a body of emulsion until the entire surface had received a coating, when it was suspended or left hanging until dried. The problem is clearly analyzed in patent 370,110. A moment's consideration of the nature of the sensitized material, the conditions under which it is applied, and the changes to which the paper is subjected will serve to show why the ordinary processes of coating and the machinery employed are incompetent to perform the operations and at the same time preserve the necessary conditions.

The sensitized emulsion as ordinarily compounded contains as the sensitive medium silver salts dissolved or held suspended in a mixture of water and gelatine, the latter serving as the vehicle for carrying and holding the sensitive material upon the paper. The silver salts are a valuable product; hence it is desirable that the minimum quantity capable of producing good work should be employed, and for that and other reasons only sufficient gelatine is mixed in the emulsion to produce, when applied to the paper, a film or layer of just sufficient depth to retain the desired or requisite quantity of the sensitizing medium. As is obvious, the layer or film of emulsion deposited on the paper must be as free from spots and irregularities as possible; hence any treatment of the paper or coating before, during, or after the emulsion is applied which will produce or favor the formation of spots, streaks, or irregularities in the surface or thickness of the film will result in the production of defective and unsalable paper, involving the loss of much valuable time, labor, and material. It must also be remembered that the emulsion is in a liquid condition when applied to the surface of the paper, that the paper becomes saturated by the water contained in the mixture, that no opportunity is afforded for a critical examination of the coating, nor can the defects in its surface

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be removed or remedied after the gelatine has once set, and that the entire process has necessarily to be conducted in a photographic dark-room; hence if the finished article contains the irregularities and inequalities mentioned they cannot readily be discovered or detected, even by a critical examination—the coating is so extremely thin—until the final test—actual use—has been applied, and then, and not before, can the merchantable and practicable value of the material be ascertained. It will readily be understood, therefore, why the ordinary processes employed for coating cloth, paper, and other materials with paint, glue, paraffine, and other substances and compounds not requiring so even and regular a surface as photographic paper, whose irregularities are measured not by instruments but by results, produced by the action of light alone—why said processes and machines have not and cannot as ordinarily worked be used in the manufacture of photographic paper. The problem was solved by Walker and Eastman and the process is fully given in the abstract of patent 370,110 appearing below.

Blue and White Prints

In the coating or sensitizing of paper for blue-print and white-print papers, the solution is usually applied by drawing the material to be coated over a roller having the sensitized solution on its surface. Sensitizing solution has also been applied to the paper by running the paper over and between a series of rollers, the periphery of which are partially submerged in a tray of the sensitizing solution. It has been found, however, in practice that in this form of device the rollers tend to remove certain portions of the film of sensitizing material from the surface, and this causes an irregular coating of the sensitizing solution, which has a correspondingly bad effect on the result obtained in the printing operation from the use of the paper when thus coated. Regardless of the particular method of distributing the solution over said material, however, it is always necessary to scrape the surplus solution from said surface. This is usually done by means of a glass scraper in the case of blue-print or white-print paper against which the paper is drawn. Various difficulties have been encountered, such as scuffing of the paper surface and abrasions, which cause streaks in papers like blueprints and white-prints; also the sizing material in the paper is, to a certain extent, removed from the paper. Such streaks and irregularities often appear to be of minor importance initially, but appear in greatly exaggerated form after the print has been developed. These difficulties, in the case of white-print paper, or blue line print paper, are so serious as to greatly curtail the use of this paper and to render the manufacture of it unprofitable.

The object of patent 1,590,417 is to overcome these difficulties by providing means for removing the surplus solution from the paper without adversely affecting the finished product. This improvement is affected by blowing the surplus solution from the fabric by a thin sheet of air. The air issues in a thin sheet from a horizontal slot in a tube and is directed substantially at right angles against the upwardly moving sheet of paper, a suitable backing being arranged behind said paper to maintain a fixed distance between the paper and the slot by preventing said paper from being blown away from said slot. The deposited solution is kept on the surface of the paper and is not rubbed unevenly into it, said solution is evenly deposited over the entire surface as the air stream equalizes the solution, and furthermore, the deposit is perfectly clean and free from floating particles of sediment, etc., as the air stream floats these particles down, whereas the scrapper would rub them into the surface. In addition, the amount of solution left on the surface of the paper may be controlled to a nicety by means of the adjustable air slot and the regulation of the pressure at the slot.

Stripping Films

Stripping films are closely related to photographic paper and are made by similar processes. A sensitive film is formed upon a suitably prepared base such as paper. The film after exposure and development can be stripped by pulling the paper and the film apart. These films can be used for lantern or window transparencies or they can be transferred from their original base or support to a mount of wood, paper, glass, porcelain, metal or other suitable material, by means of a suitable adhesive, for example a 5 per cent solution of warm gelatine, in the usual and known manner, the base after drying being then stripped off. The base may be composed of paper which has been passed through a bath of paraffin wax and dried. A substratum has been applied to this base to enable the emulsion to be applied evenly to the said base in the first instance, to prevent the emulsion from stripping off the base during the subsequent operations of developing, fixing washing or toning, and afterwards to allow the gelatine emulsion to be stripped from its original base when required. This substratum has in certain cases consisted of a waterproof resinous material such as sandarac or mastic. This, however, being insoluble in water, portions of it were liable to remain adhering to the emulsion in the finished picture and to spoil the effects of the same. According to patent 1,474,596 the substratum is produced by a solution containing as its chief ingredient an emulsion hardening agent, such as is employed for example, as a component of the ordinary bromide emulsion. A suitable hardening agent is chrome alum or formaldehyde but ordinary alum may be used. The hardening agent also serves to bind the emulsion to the substratum, and therefore in that sense may also be regarded as a binding agent. An anti-greasing agent such as quillaia bark is also added to allow of even spreading of the emulsion on the substratum and some glycerine is also preferably added.

Stripping-films have also been produced by preparing a strong, thick, white, and comparatively opaque paper as a base upon which the sensitive emulsion has been spread to render it capable of being stripped or removed from the paper base in one of the following ways:

(a) The paper base has been coated with a thick coating of gelatin in one or several layers and the sensitive emulsion spread thereon in a thick layer. This gelatin coating being soluble at a lower temperature than the film of emulsion, it was placed in warm water to dissolve the soluble gelatin and permit of the removal of the paper base from the film.

(b) The paper base has been coated with a covering of gum or other such substance, soluble in cold water or other liquids, to receive the sensitive emulsion.

(c) The paper base has been coated or treated with a solution of lac or shellac, upon which the sensitive emulsion has been coated; but it was found that films so prepared would frequently refuse to strip or separate from the base as and when required, thereby rendering such films a failure.

(d) The paper base has been coated or treated with collodion or with rubber or with collodion and rubber to receive the sensitive film. These substances have allowed the film to be easily stripped or removed from the base, but frequently did not hold the film securely enough to the paper, the result being that the films often "frilled" during development and washing, and in some cases, owing to the rubber changing or hardening upon keeping, the films dropped off the paper before or during use.

(e) The paper base has also been coated or treated with one of the substances mentioned above to render the film capable of being stripped or removed, and the sensitive film has to be strengthened or reinforced at some stage of the process by applying thereto a second film of insoluble gelatin collodion, or the like. This has usually been done after the picture on the film has been passed through the operations of development, fixing and washing. In a stripping-film we find that it is of the utmost importance to secure success that the sensitive film should adhere perfectly to the paper base or backing during all the operations until finally dried and that then or at any time afterward it should be capable of being quickly and easily separated or stripped.

The following abstracts give a survey of the U. S. patents relating to machines and processes for producing photographic paper:

1. Brinckerhoff Patent No. 51,010. Nov. 21, 1865.

Gelatin or other material of a gelatinous nature is softened by soaking in water and is then heated by a water or steam bath to completely dissolve it, using about three ounces of gelatinous material to a gallon of water. To this is added about six ounces of kaolin or terra-alba. Into this solution, while hot, the paper or other material to be prepared is dipped and then allowed to dry, or partially dry. A saturated solution of alum is diluted with two parts of water to one of said saturated solution. The paper is submerged in this solution. The alum combining with the gelatinous material, forms a fine cellulosed surface that is insoluble in the solutions employed in photography, and which, penetrating the pores of the paper, fills them, and also produces an even, smooth surface, by enveloping and holding down any fibers that otherwise might stant upon on the surface of the paper.

2. Gibson Patent No. 60,626. Dec. 18, 1866.

A coating composition consisting of gelatin, animal glue or albumen thickened with clay and zinc oxide to give it body is applied to paper by means of a brush or bath. The paper is then dried and subjected to an astringent solution composed of gallic acid, boracic acid, alum or tannin, dissolved in water. The gelatinous mixture or body may be applied to or incorporated with the paper pulp in the early states of the paper manufacture, and the paper web, before delivery from the paper machine, may be caused to pass in contact with the astringent solution, and subsequently between drying and calendering rollers.

3. Crosman Patent No. 62,256. Feb. 19, 1867.

The invention relates to a process by which sheets of various material, such as leather, cloth, paper, are covered by a coating applied in the form of a fluid, or a fluid solution, in such a manner that the resulting coating will be smooth and of uniform thickness, so that when the solution applied contains chemical salts these will be equally distributed over the surface which is so covered. The process consists in first thoroughly moistening or saturating a sheet which is to be coated by immersion in suitable fluid, which may be cold or heated, according as one or the other condition is best adapted to produce the desired effect; then, in depositing the dampened sheet on a level table, and by suitable manipulation causing the sheet on its under side to come into contact with the upper surface of the table, by expressing air and any free fluid from between the sheet and table; and also, where found necessary, removing superfluous fluid from the upper surface of the sheet by application thereunto of bibulous paper, or other suitable absorber or remover; and finally, in applying to the upper surface of the sheet, when in the condition produced by the second operation, a fluid material, or a fluid solution of the material or of the mixture, with which the said surface is to be coated. In practice the level table top should be made of substances not changeable in form on the application of fluid, and glass, slate, marble, or metal may be used. In applying the solution, which, upon drying, forms the desired coating of the sheet, and where the solution is of such a nature that but a small quantity will leave or deposit the requisite coating, proceed in the manner of water-color artists when laying broad washes of flat tints. But when a considerable quantity or depth of fluid is required to make the desired coating use is made of such a frame as paper-makers term a deckle, (the bottom of which may be faced with rubber,) placing it on the top of the table around the paper, the edges of which the inside of the frame nearly touches. A suitable quantity of solution is poured on the paper which gravitates into uniform depth on the paper, it being prevented from flowing off from the paper by the deckle. In some cases the distribution of solution may be aided by the operator's use of a brush. In applying the solution use may be made of a reservoir, caused to traverse over the table, and delivering the solution uniformly over the breadth of the sheet while so passing; and if desired the solution may be made to flow into or upon a brush attached to said reservoir, and coming into contact with the sheet, while the amount of the solution delivered may be made to depend upon a suitable valvular arrangement, and the speed with which the reservoir is moved. With this reservoir may be employed the deckle, especially if considerable depth of solution is to be left upon the surface of the sheet.

4. Powell and Lehnen Patent No. 178,380. June 6, 1876.

The invention consists of paper for photographic plates made waterproof, and coated on the back with an oil and varnish paint, and on the face with one or more coats of baking japan or varnish, each coat being baked in an oven. The paper employed may be of any convenient size and thickness, and may be manufactured so as to be heavier and better liable to sink in the bath by adding clay, barytes, or other heavy substance to the pulp. The paper is first made waterproof either with oil or with a mixture of oils and turpentine or benzine, or any kind of varnish. A coat of any suitable oil or varnish paint is put on the back of the paper to increase the weight of the same so that it will sink readily in the bath. The paper is then put into an oven and baked until hard, the baking operation commencing at a low degree of heat. The other side or face of the paper is then coated with one or more layers of baking japan or varnish, according to the finish required, and each coat baked as before, any desired color or tint being imparted to the face surface according to the different objects to which the paper is applied.

5. Hutinet and Lamy Patent No. 253,827. Feb. 14, 1882.

The method of preparing photographic paper with gelatin bromide of silver or analogous sensitive compound for positive printing, which consists in applying, in connection wth said compound, a varnish for imparting brilliancy, and thus rendering brilliant the sensitive pellicle itself, so that varnishing after the printing operation is rendered unnecessary. The following are illustrations of a number of ways in which the invention is carried into effect.

First method.—The paper is covered with a layer of gelatin or other permeable or impermeable gummy or albuminous substance containing baryta white or other white, wax-soap, or a solution of white gum-lac. After drying it is calendered and made to shine by the aid of a brush or pad, with or without talc. It is then covered with a sensitive layer of gelatin and bromide or other suitable way. The bromide is preferred over other silver compounds on account of its great sensitiveness.

Second method.—The paper is covered with a solution of resin or gum-resin in alcohol, an essence, an alkaline or saline solution, or other suitable solvent. After drying it is calendered, and it is then covered with the sensitive layer of gelatin-bromide of silver.

Third method.—The paper is covered with a varnish of collodion, and is then, with or without calendering, coated with the sensitive layer of gelatin-bromide of silver.

Fourth method.—The paper is coated with the sensitive layer of gelatin and bromide of silver, and then, after drying and before printing, is covered by means of a brush, a bath, or a mechanical roller with the solution of a white resin or gum-resin in alcohol, essence, alkaline or saline solution, or other solvent. Prepared in this way the layer for imparting brilliancy to the print is hard and insoluble.

Fifth method.—The solution of resin or gum-resin is mixed with the sensitizing composition of gelatin and bromide of silver, and the paper is covered with the mixture.

Sixth method.—The paper is prepared as in the fifth method and after drying is coated with the solution of resin or gum-resin by itself. A hard, insoluble, and brilliant surface is thus produced. In order that the surface of the paper prepared as described may not be liable to become cracked a proportion of

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glycerine or of sugar is introduced into the preparations, or the solution for imparting brilliancy is made with various kinds of resins.

6. Woodbury Patent No. 263,277. Aug. 22, 1882.

The method of preparing flexible supports of paper for photographic reliefs or intaglios, which consists in coating the paper sheets with a solution of gelatine dried and rendered insoluble by chrome alum, and then floated on its reverse side upon a solution of shellac dissolved in water by the aid of borax.

7. Roche Patent No. 314,346. March 24, 1885.

This invention consists in the production of a photographic printing paper having a toothed facing of gelatin and bromide of silver. Heretofore when a sheet of paper has been coated with a gelatin emulsion sensitized with a bromide of silver, the surface, when dry, has been smooth and incapable of having a tooth to receive and hold the mark of a crayon or pencil. Different toothing substances insoluble in the coating emulsion might be used, including sulphate of baryta, pumice-stone powder of emery powder of different grades, and the paper to which the sensitive emulsion is applied may either be sized or unsized, and the gelatino-bromide of silver emulsion having the insoluble toothing substance incorporated with it may be applied to the surface of the paper on which the positive photographic printing is to be done in any suitable manner known to the arts for applying other or simple emulsions. If the graining or toothing substance used be sulphate of baryta, which gives a superior finish to the white portions of the picture, then said sulphate may be used in a wet state, as when used in a damp state it readily assimilates with a gelatin emulsion and is held in suspension therein. It might, however, be used in a dry state, in which case the proportion may be about one dram of sulphate of baryta to each ounce of the sensitive emulsion, first mixing it, however, in a weak solution of gelatin and water, and afterward mixing and incorporating it in any suitable manner with the sensitive emulsion. Said sulphate of baryta will be held in suspension just as the bromide of silver is held, and does not affect the sensitiveness of the emulsion.

8. Edwards Patent No. 314,811. March 31, 1885.

An apparatus for coating sheets of glass or paper with gelatin emulsion for photographic purposes, movable and adjustable scraper or scrapers, of any suitable shape or size, in combination with a roller and trough, for the purpose of applying the coating of gelatin or other emulsion to the upper surface of the plates. When the roller is made to revolve in the emulsion, the solution which adheres to the surface of the roller is taken off by the upper edge of the scraper, toward which the roller revolves. The emulsion then flows down the scraper to the surface of the plates which are carried by the traveling band below. By this means the plates are coated with an even layer of emulsion, the thickness of the coating being regulated by the relative speeds of the roller and the traveling band which carries the plates.

9. Newton Patent No. 343,387. June 8, 1886.

This invention relates to means for evenly laying or distributing the sensitive emulsion on both sides or surfaces of photographic paper or tissues simultaneously. The means consist in combination with the guiding, tension, and wiping devices of flexible flaps or wipers arranged for operation on opposite sides of the paper.

10. Eastman Patent No. 370,050. Sept. 20, 1887.

This invention relates to machinery for automatically coating a continuous web or strip of paper with a thin and uniform film of gelatino-argentic emulsion, and for manipulating and drying the same, to produce what is known to the trade as "bromide paper" for pictures and negatives. In carrying out the coating process the paper is drawn through a trough containing a fluid mixture of the sensitized emulsion, the paper being held in close contact with the surface of a roller, around which it is drawn to prevent the emulsion from flowing onto the back of the paper, and to cause the latter to be carried in contact with the fluid and emerge therefrom in a flat condition, so that a uniform amount of the fluid emulsion will be caused to adhere to the surface of the paper and be carried off thereon. After the paper has passed through the bath it must be moved continuously in the same direction and at a uniform speed until the coating has become cooled and sufficiently hardened to prevent running, when it is suspended upon a frame until the moisture, which in the meantime has permeated the paper, is evaporated. The main difficulty heretofore experienced in performing these necessary operations by machinery has been with the feeding and carrying devices. If the coated surface of the paper is brought into contact with any foreign substance from the time it emerges from the bath until thoroughly dried and hardened, the integrity and uniformity of the film will be defective for practicable purposes. It is, moreover, to be observed that the paper when coated and while still wet if pulled or drawn with any considerable degree of force is liable to form in wrinkles, due to unequal stretching, and the fluid or semi-fluid coating will be caused to flow from neighboring points toward and into the wrinkles, thereby producing streaked and consequently defective paper. The object of this invention is to produce a mechanism which shall perform the necessary operations with a minimum loss of material and produce a continuous web of paper having a film or coating of sensitized material of uniform thickness and free from streaks. It consists of a machine having the combination, with the trough containing the emulsion, the immersion-roller, and the rollers for conducting the paper to the immersion-roller, of a driven roll over which the coated web is conducted, a moving surface applied to the edges of the web of coated paper and the face side thereof and operating to press and hold the web in contact with the said roll, driven rolls upon which the paper is supported and kept in motion while the coating is setting, and a hanging or drying frame upon which the web is delivered and retained until dried.

11. Walker and Eastman Pat. No. 370,110. Sept. 20, 1887.

The process relates more particularly to the treatment of the paper after the coating has been applied; and it consists, generally stated, in so conducting the operation that after the paper has been supplied with a thin and uniform coating of the emulsion, and while the layer or film is still in a fluid state, the coated web shall, while under sufficient tension to maintain its surface flat, be drawn or moved continuously in the same direction until the gelatin in the coating has set, after which, and as rapidly as the web is delivered, it is hung in loops upon a frame, where it is allowed to remain until the paper has been thoroughly dried. It is essential that the coated face be unobstructed—that is to say, it must be held and maintained out of contact with any foreign substance—such as pressing-rolls, scrapers, or other devices—which, if permitted to so much as touch the coating, would defeat the purpose of the process by destroying the uniform character of the film and render the latter unfit for photographic purposes. The paper as it passes through the emulsion takes up a large quantity of water, which acts to expand and soften the web; hence it becomes necessary to apply sufficient tension to draw it flat over the rollers or other supporting devices. The tension on the paper must, however, be so regulated that while serving to maintain the web flat and move it at a uniform speed, it shall not produce wrinkles by the unequal strain upon the now weakened and expanded paper, for if such wrinkles or other irregularities in the surface occur the still fluid coating will run irregularly and form in streaks on the paper. The movement of the web after the coating material has been evenly applied, and which is continued until the coating has set or stiffened so as to prevent running, is a progressive movement, the travel being at all times forward;

but in order that the flow of the material may be regulated and the uniformity of the coating maintained it is desirable that the direction—i.e., the angle or inclination—of the web during its progressive movement should at all times be reversed or altered, so that at one point it will travel upward and subsequently downward, or vice versa, thereby arresting or changing the direction of the flow, if any takes place, of the liquid coating upon the traveling web. In the present machine the web as it emerges from the coating device is caused to move first upward, then horizontally, downward, horizontally, and again upward to the delivery-roller. The rate of motion and distance intervening between the coating devices and the hangup frame vary with the state of the atmosphere and the quality of the emulsion. Ordinarily, the rollers are driven at such a speed as will advance the paper twenty feet a minute, and with the temperature of the room maintained at about 65° Fahrenheit the hang-up is located about thirty feet distant—that is to say, the paper is maintained in motion for about one to two minutes after leaving the coating-bath before it is deposited upon the slat of the drying-frame. The time and distance must of course be adjusted and regulated according to the temperature and state of the atmosphere, and if desired, artificial cooling and drying devices may be employed; but under all circumstances, in order to prevent blemishes when practicing the continuous process, the coated web must be kept in motion and flat until the gelatin has set, so as to be incapable of further movement on the surface of the paper, and when this stage has been reached (but not before) it can be suspended in loops upon the drying-frame and remain there until the moisture has evaporated without injury to the coating. Under certain circumstances, as when it is desired to use a thin emulsion, or in warm weather, the setting of the coated film may be facilitated by reducing its temperature as it passes from the coating apparatus to the hang-up machine. This artificial cooling of the coated web may be accomplished by the use of a current of cold air, or by causing the web to pass over a surface the temperature of which is kept down, as by a current of cold air, water, or a cooling mixture or compound. A fan-blower or other suitable device may be employed to produce a current of air, which is cooled by passing over ice or in any other preferred manner, the air being carefully strained from dust.

12. Walker and Eastman Pat. No. 370,111. Sept. 20, 1887.

This patent is a division of patent No. 370,110 and claims a process of coating a continuous web of fabric with a uniform layer of sensitive gelatino-argentic emulsion, consisting in applying the emulsion to one side of the web as it is passed through the coating device, in artificially cooling the coated web, in keeping the coated web in continuous motion and the coated surface removed from contact with obstructing devices until it is set, and finally, in delivering the web to a suitable rack or frame to dry.

13. Cohn Patent No. 385,297. June 26, 1888.

The invention relates to the making of plates or sheets especially intended for use as a substitute for the metallic plates used by photographers in the taking "tin type" pictures, so called. The process consists in first coating paper with a solution of gelatin, then drying the gelatin, then applying a coating of shellac and lamp-black, then japanning the resulting product and baking or drying the japan.

14. Rogers Patent No. 402,279. April 30, 1889.

The invention consists in covering the surface which is to receive the print with a thin coat of the following solution or its chemical equivalent. In thirty-two ounces of water is dissolved enough common salt to make the solution register 10° by the silver test. The amount required is about one-half ounce of dry salt. To this is added the well-beaten white of one egg. About ten drops of ammonia are added and after allowing it to stand a few minutes filter through a clean cloth or any other filtering device to remove all lumps and undissolved matter. The addition of one dram of gelatin before filtering causes the mixture to spread more evenly and avoids the liability of streaks, which sometimes occur when the solution is applied too freely. Acids may be added after filtration to color the resulting print. The solution may be applied by means of rollers, or it may be applied by a brush or other suitable means and then removed as completely as possible by a scraper or other means. It is desirable that the coating be thin. When the paper is dry, the prepared surface is coated with silver, and all subsequent treatment of the paper to produce a photograph is the same as that employed with the paper in ordinary use, excepting that less time is required for printing and only about one-fourth the amount of gold is required to tone it.

15. Bott Patent No. 463,326. Nov. 17, 1891.

The process of preparing an albumenized paper for photographic purposes, which consists in providing the paper previous to the application of the albumen with a water-proof mineral facing such as sulphate of barytes, (blanc fixe,) china-clay, Cremnitz white, or zinc-white—intermixed in such suitable proportion with any of the well-known waterproofing adhesive compositions as to form a flowing paste that can be readily spread upon the paper.

16. Woodward Patent No. 539,848. May 28, 1895.

A machine for coating paper with emulsion or other solutions, the combination of a dipping pan, a revolving cylinder adapted to carry the paper to be coated, a lever device for lifting said pan so that the emulsion in the pan will coat a sheet carried on said cylinder, a roller revolving in such pan and over the paper while being coated, whereby the thickness of the coat will be governed thereby, and an automatic feed device for retaining the emulsion in the pan at the same level.

17. Reichenbach Patent No. 619,617. Feb. 14, 1899.

Experience with paper-coating machinery demonstrates that it is desirable to subject the coated paper to as little tension or longitudinal strain as possible until it becomes set, as thereby the tendency to form wrinkles or flutes in it is diminshed or overcome. This is particularly the case where, as in manufacturing papers, it is necessary to secure the greatest possible uniformity of the coating. In such operations as usually practiced the strain of feeding the paper produces wrinkles or flutes which extend in various direction along or across the paper, forming hollows into which the fluid coatings run and produce irregularities in the thickness. In order, therefore, to advance the coated paper while under as little tension or strain as possible a machine has been constructed so that the paper is fed forward by its own gravity while on its way from the coating mechanism to the looping-slat of the hand-up. For this purpose the coating mechanism and a carrying-roller above it is located at an elevation relative to the hang-up so that the paper descending from the carrying-roller overbalances the paper traveling up from the coating mechanism and draws it along until delivered to the looping-slat. The mechanism is arranged to operate with as little friction as possible and the paper is unwound from the stock-roll and fed to the coating mechanism by feeding-rollers. A few ounces preponderance in the descending paper will pull the ascending paper along and with such a gentle continuous strain that it remains practically smooth and flat and the coatings are more regular and uniform.

18. Moh Patent No 645,209. March 13, 1900.

This invention relates to the production of flexible films which after exposure, development, fixing, and washing are adapted to be separated from a backing sheet which supports them during the above operation, the film thus separated being better adapted for printing. The process consists in applying to a sheet of paper, a layer of caoutchouc, then applying on the caoutchouc a layer of collodion, and finally on the collodion a layer of gelatin serving as a carrier for the silver salt, whereby the grain of the paper is imparted to the caoutchouc layer which adheres to the collodion and gelatin layers. The caoutchouc layer adheres

to the paper fibers sufficiently to enable the different operations of developing, washing, etc., to be effected, but not sufficiently to present any considerable resistance to the stripping of the dry film from the paper. Thus a clean easy separation of the film from the paper is attained. A further advantage consists therein that the caoutchouc layer resting directly on the paper takes the grain thereof. By this means it is possible to give to this caoutchouc layer by selection of the proper paper a grain of any desired coarseness.

19. Thornton and Rothwell Pat. No. 647,540. Apr. 17, 1900.

This invention consists, essentially, in a photographic receiving film or plate comprising a transparent gelatino-bromid emulsion coated on a black or colored flexible backing such as black paper, celluloid, or other similar material—which when exposed in the camera is developed and fixed and afterward treated with a whitening solution. The black or colored base forms by its color the dark portions of the picture, the shades and light portions being formed by the varying layers of white colored deposit which form the image.

20. Thornton Patent No. 664,982. Jan. 1, 1901.

The process of manufacturing photographic films plates or papers, by spreading a very thin coat of the sensitive emulsion thereon, immediately treating such thin coat with a blast of heated air whereby it is almost instantaneously dried, again spreading on the first coat another very thin coat of sensitive emulsion, treating such second coat with a blast of heated air, again spreading a very thin coat of the sensitive emulsion and dry same, and so on until a sensitive film is built up upon the support of sufficient thickness.

21. Thornton and Rothwell Pat. No. 670,118. Mar. 19, 1901

The invention consists, essentially, in preparing or coating a paper base with a compound or substance prepared by treating or dissolving the aluminium or zinc salts of fatty or resin acids (a mixture of these salts) with a volatile light hydrocarbon solvent, such as benzol or coal-tar naphtha, and drying or solidifying same in a current of heated air and then upon this substance spreading a layer or coating of sensitive emulsion sufficiently thick to produce a strong film.

22. Grenier Patent No. 696,632. Apr. 1, 1902.

The process of preparing fabric for photographic uses, by mixing extract of white algae, citric acid, and ammonium chloride, then wetting the fabric with the solution, then drying it, then applying a sensitizing solution, and finally again drying it.

23. Lurz Patent No. 758,086. April 26, 1904.

The method of preparing platina paper for photographic purposes wherein the sensitive surface is composed of successively-applied layers of chemical substances which consists in first moistening the paper on one side only, then applying a chemical substance to the moistened side of the paper, spreading the said substance smoothly over the said side of the paper, then drying the whole, and then applying the successive layers of chemical substances in substantially the same manner, the drying operation being performed after one layer has been applied and before the application of a succeeding layer.

24. Derepas and Derepas Pat. No. 770,421. Sept. 20, 1904.

A photographic paper provided on its reverse side with a coating of solid gum-lac which is adhesive when pressed hot and which is not sensitive to the action of liquid baths.

25. Chelius Patent No. 778,740. Dec. 27, 1904.

A process for mounting photographs which consists in applying to the reverse side of the sensitive paper a tinted coating consisting of gelatin, starch, isinglass and shellac difficultly soluble in water which becomes adhesive when moist, exposing the paper to the printing action, wetting the paper, and applying while moist to a suitable mount.

26. Earle Patent No. 992,345. May 16, 1911.

The process of manufacturing photographic postal cards consisting of first printing one one side of a continuous roll of suitable paper, then coating the other side thereof, then moving said paper vertically from the coating mechanism, then setting said coating and then simultaneously completing the drying of the coating and printed matter. Heretofore it has been customary to first coat the heavy paper used for postal cards with a suitable emulsion; then "set" the emulsion by subjecting the same to a low temperature; then dry the same with a high temperature, and then cut the coated paper into postal card sizes, after which they are printed on job presses. This method not only consumes considerable time, but, by reason of the subsequent necessary handling, increases the liability of the cards becoming soiled, and the liability of the coating being injured by the moisture of the hands.

27. Cossitt and Castor Patent No. 1,180,255. Apr. 18, 1916.

The invention consists in continuously feeding a finished web, sheet or film of material through a vacuum chamber and in its transit applying to one side thereof the desired coating which will usually be sensitized photographic solution or emulsion, and after the application of the same to continue the transit of the sheet, web or film while suitably supported through the vacuum chamber for a sufficient time to effect the drying or hardening of the coating, so that at the end of the operation, the coated product will be in condition to be coiled up, used, or stored.

28. Pin Patent No. 1,184,772. May 30, 1916.

A process of forming a gelatinous film on a temporary paper support, consisting in coating the support with an aqueous solution of soap made from cocoanut oil, then depositing thereon a mixture of gelatin, glycerin and an aqueous solution of soap made from cocoanut oil, and then spreading a photographic sensitive layer on the gelatinous film.

29. Middleton Patent No. 1,329,918. Feb. 3, 1920.

The process of preparing photographic printing and transfer paper which comprises conducting paper in the web through melted paraffin wax, thence between rollers to a buffing device, thence to a substratum coating device which applies and distributes the substratuming solution, also removes the excess, and thence through a chamber arranged so as to keep the substratum coating device free from any disturbing effect from the evaporation taking place in the drying chamber.

30. Hochstetter Patent No. 1,403,779. Jan. 17, 1922.

In a process of sensitizing a medium, dividing a strip of the medium into a plurality of strips, sensitizing said strips at 85 deg. F., temperature, passing said strips into a temperature of 50 deg. F., passing said strips into a temperature from 70 to 80 deg. F., passing said strips into a temperature of 80 to 90 deg. F., passing said strips into a temperature of 95 to 110 deg. F., and reducing the temperature of said strips to that of the surrounding air.

31. Kent Patent No. 1,474,596. Nov. 20, 1923.

A process for preparing a photographic transfer film, which consists in treating a waxed paper base with a solution of chrome alum, quillaia bark and glycerine to form when dry a substratum upon the said base and in coating the substratum with a sensitive emulsion.

32. Schloemann Patent No. 1,504,150. Aug. 5, 1924.

The process for the manufacture of paper for photographic purposes which consists in mixing a heated solution of chloride of barium in watery gelatin with a solution of sulphate of ammonia in water, allowing said emulsion to mature at raised temperatures until a certain size of grain is produced, cooling said emulsion until it stiffens, granulating, washing, re-melting and applying it to the raw paper.

33. Brunk Patent No. 1,590,417. June 29, 1926.

A machine for coating paper and the like with a sensitizing solution comprising a solution applying means, pneumatic means for removing the surplus solution from the paper comprising a conduit with a tapered extension and a slot therein, means for varying the length of said slot, and means for varying the width of said slot.

Section of the

COST ASSOCIATION OF THE PAPER INDUSTRY

Affiliated with

THE AMERICAN PAPER AND PULP ASSOCIATION

Edited by
THOS. J. BURKE, C. A., Sec.-Treas.

Cost Association's Convention

Twenty-Second Semi-Annual meeting of the Association will be held in the Banquet Room 115, at the Waldorf-Astoria Hotel, New York City, on Tuesday and Wednesday, February 19 and 20, 1929

Calendar Simplification

Following the Address of Welcome by President Breck Aspinwall of the Oxford Miami Paper Company, which will be given at 10 o'clock on Tuesday morning February 19th, Seth L. Bush of the Crocker-McElwain Company will talk on the "International Fixed Calendar—What it is and Why We Want It." This is a subject of special interest to accountants, although also of great interest to the industry in general.

In this connection it should be noted, that the Hon. S. G. Porter, Chairman of the House Committee on Foreign Affairs last December introduced a Joint Resolution, recommending that the President propose the calling of an International Conference for "Simplification of the Calendar," while a similar resolution was introduced into the Senate by the Hon. Thomas D. Schall. Hearings have been held by the Foreign Affairs Committee, and a large volume of testimony taken. A number of influential men are backing this project, and in view of its particular significance to our industry, it is a matter that should receive our careful consideration and support. Mr. Bush having appeared before the House Committee on this subject, is of course, well qualified to deal with it.

Tariff and Costs

The work that has been done by the Import Committee of the American Paper Industry during the past few years, is too well known, to require detailed praise at this time. It is sufficient to say, that as a result of this work, many thousands of dollars have been saved in the paper industry. The necessity for the work is not diminishing, and in fact, the number of cases handled by the Import Committee are increasing rather than decreasing in number. The manager of that Committee Warren B. Bullock, has kindly consented to talk on the subject of "Cost Facts and Tariff Making," because correct costs do play an important part in the work of this Committee.

It is hoped that there will be a large attendance to hear Mr. Bullock, for what he has to say vitally affects all of us.

Revenue Act of 1928

March 15th is approaching, the time when those corporations and others whose fiscal year coincides with the calendar year, have to send in their income tax reports for 1928. Vital changes were made in the law by the Revenue Act of 1928, and we have secured an expert on this subject in Henry B. Fernald of New York City, who will explain the "Recent Changes in Income Tax Law and Procedure Particularly Affecting the Paper Industry."

Mr. Fernald who is a partner in the well-known firm of Loomis, Suffern and Fernald, will be glad to answer specific questions following his talk; he requests that any of great importance should be submitted in writing to him, prior to the meeting. Any one therefore, planning to attend this meeting who desires information on a vital point, should address the inquiry to the Secretary-Treasurer of the Cost Association of the Paper Industry, 18 East 41st Street, New York City, as soon as possible, so that these inquiries may be forwarded to Mr. Fernald and thus enable him to prepare his reply prior to the meeting.

The Scope of the Accountant's Work

D. A. Wilcox of the Oxford Miami Paper Company, New York City, will read a paper on "Cost Finding and Estimating." Mr. Wilcox believes that there are a number of things about which the cost accountant should inform himself, when preparing cost estimates, at this time.

It will be remembered that he has appeared previously before this Association, when he gave an address on "Paper Machine Efficiencies," which was very favorably received. He is also the author of a series of articles which are appearing in a well-known trade journal.

Association Statistics in the Paper Industry

The Statistician of the American Paper and Pulp Association Jack Kavanagh, will explain the statistical data being prepared by the American Paper & Pulp Association, and what that Association hopes to be able to accomplish in the future, if it can obtain the close co-operation of the mills in the industry. Since many of those in attendance at the Cost Association Meetings are responsible for compiling the data required by Mr. Kavanagh, it is hoped that this session will result in a better understanding of what the Association is trying to accomplish, and give our members an opportunity to question Mr. Kavanagh regarding any doubtful points.

Bone Dry or Air Dry

At our last Convention in Cleveland, a very interesting session was held on the question of whether "Pulp Should be Sold on an Air-Dry or Bone Dry Basis." During the following discussion the point was raised, if pulp were to be figured on a Bone Dry basis all materials used in the manufacture of paper should be figured on a similar basis.

Mr. W. M. Fischer of Curtis & Brother Co., Newark, Delaware, will give an address on the subject of "The Reconciliation of Fur-

nish to Production on a 'Bone-Dry' or 'Air-Dry' Basis," at 10 A. M. on Wednesday morning.

In view of the importance of accuracy in cost finding, this is a subject that should be thoroughly discussed, so that everybody may have an opportunity of forming a definite opinion regarding the practicability of working on a "bone dry" basis, as advocated by some of our members.

Plan Your Work and Work Your Plan

The firm of Scovell, Wellington & Company, Certified Public Accountants is well-known to our industry. One of their partners Mr. H. G. Crockett, C. P. A., New York City will speak on the above subject, following Mr. Fischer's address.

He will explain that practicability and usefulness of setting up standard costs and how they tie in with the budget plan advocated by the Cost Association. Mr. Crockett will come prepared to answer questions of all kinds on this subject, and to explain not only the theoretical but the practical value of working on a systematic plan.

Luncheon Meeting for Executives

This is a special meeting planned each year by the Cost Association for executives and will be presided over by Col. B. A. Franklin, Vice-President of the Strathmore Paper Company, and will also be attended by Mr. D. C. Everest, President of the American Paper and Pulp Association and Vice-President and General Manager of the Marathon Paper Mills Company. Mr. Everest has spoken highly of the work done by the Estes organization, and one of the speakers at this Luncheon will be Mr. L. V. Estes, President of L. V. Estes, Inc., Paper Mill Engineers, Chicago, who will speak on the subject "Higher Wages—Lower Costs."

This concern has been highly recommended to us not only by Mr. Everest, but the President of another large mill in Wisconsin, has advised us that as a result of the work of this organization, they hope to effect a saving of $50,000 per annum or more, in their mill. This is high praise for Mr. Estes, and as a result, we expect a large attendance at this meeting.

Tickets which will cost $3.00 each can be obtained from the Secretary-Treasurer of the Cost Association of the Paper Industry, at 18 East 41st Street, New York City, and those planning to attend are advised to make early application for tickets, as the room will not accommodate more than 75 people, and a number of reservations have already been made. Part of these reservations are due to the fact, that Dr. E. O. Merchant, Statistician of the G. H. Mead Company, will be the other speaker.

Dr. Merchant's prognostications regarding the course of business are too well known to require praise at this time. His subject will be "The Business Outlook for 1929," and it is a foregone conclusion, that his opinions will be listened to with great respect, in view of his past record.

Wednesday Afternoon Session

Following the Luncheon Meeting, the closing session will start with a talk by J. A. Grimes, Engineer in Charge of Depreciation Studies, Bureau of Internal Revenue, whose subject will be "Progress in Depreciation Studies in Industries to Date." Mr. Grimes addressed us last year on the subject of his work, and this year will follow this up by giving us some information as to the progress made during the past year, in these Depreciation Studies.

Following Mr. Grimes' address, Thomas J. Burke will talk on the subject of "Depreciation Reserve Funds and Reproductive Values." In this paper Mr. Burke has a suggestion to make, which may be of interest to those planning a revision of their Plant Ledger, and the methods being used to take care of the annual depreciation.

Business Session

The Convention will close with a Business Session, when reports will be presented on the following subjects:—

Labor Turnover in the Pulp and Paper Industry for 1929.

Report on "Analysis of Production Costs"

as well as the general work being done by the Cost Association.

All sessions it should be noted, will be held in the Banquet Room No. 115 at the Waldorf-Astoria Hotel, and all are welcome to attend, whether members of the Cost Association or not.

No charge will be made for registration other than the charge for those desiring to attend Luncheon Meeting, tickets for which will be $3.00 each.

Box Board Production

[FROM OUR REGULAR CORRESPONDENT]

WASHINGTON, D. C., February 4, 1929.—December production of box board, based on reports to the Department of Commerce by 93 firms operating 120 plants (reports for earlier months including four concerns now out of business) was 71.2 per cent of capacity, as compared with 84 per cent in November and 77.4 per cent in December, 1927. In the following table the capacity data vary according to the normal number of working days in each month:

Year and Month	Operation: Inch hours Capacity	Operation: Inch hours Operated	Operation: Per cent of Capacity	Production: Short Tons Capacity	Production: Short Tons Output	Production: Per cent of Capacity	New Orders Short Tons	Unfilled Orders (end of month) Short Tons
1927—								
Sept.	10,474,300	8,673,208	82.8	275,100	225,617	82.0	235,936	116,383
Oct.	10,893,272	8,803,337	80.8	286,104	224,195	78.4	220,215	102,810
Nov.	10,474,300	8,308,358	79.3	275,100	213,056	77.4	184,551	76,032
Dec.	10,474,300	7,557,164	72.1	275,100	188,228	68.4	180,409	74,664
Total (year)	128,205,432	96,757,077	75.5	3,367,224	2,401,324	71.3	2,476,211	.....
1928—								
Jan.	10,372,900	7,833,458	75.5	273,125	203,882	74.6	204,128	80,417
Feb.	10,372,900	8,136,737	78.4	273,125	211,862	77.6	215,333	85,862
March	11,312,244	8,843,542	78.2	297,108	227,344	76.5	244,871	93,380
April	10,474,300	8,311,710	79.4	275,100	221,079	80.4	211,304	84,513
May	10,893,272	8,733,965	80.2	286,104	242,394	84.7	224,366	73,157
June	10,893,272	8,199,515	75.3	286,104	228,646	79.9	228,252	77,782
July	10,474,300	7,992,170	76.3	275,100	201,153	73.1	209,976	79,492
Aug.	11,312,244	9,236,068	81.6	297,108	230,750	77.7	236,682	81,816
Sept.	10,055,328	8,344,464	83.0	264,096	224,971	85.2	234,449	87,097
Oct.	11,384,820	*9,365,352	*82.3	299,052	*243,794	81.5	*240,391	81,022
Nov.	10,541,500	*8,666,458	*82.2	287,976	*241,924	*84.0	*248,147	*93,203
Dec.	10,541,500	7,631,500	72.4	287,976	265,046	71.2	197,148	94,174
Total (year)	122,628,580	101,294,939	82.6	3,401,974	2,682,845	78.9	2,695,047	.....

Year and Month	Shipments of boxboard Short Tons	Stocks of boxboard, end of month Short Tons	Consumption of waste paper: Capacity Short Tons	Consumption of waste paper: Consumed Short Tons	Per cent of Capacity	Stocks of waste paper, end of month: At plants Short Tons	Stocks of waste paper, end of month: In transit and unshipped purchases Short Tons
1927—							
September	228,213	42,923	256,450	216,652	84.5	126,548	51,441
October	226,647	41,630	266,708	219,627	82.3	126,040	57,936
November	212,830	41,105	256,450	203,962	79.5	128,639	50,276
December	183,442	42,777	256,450	179,447	70.0	150,036	35,382
Total (year)	2,481,135	.....	3,138,948	2,375,473	75.7	.....	.....
1928—							
January	196,984	49,032	255,225	189,744	74.3	153,747	62,181
February	209,477	50,350	255,225	193,966	76.0	140,104	60,038
March	237,621	40,439	276,966	209,649	75.7	139,255	47,322
April	220,315	40,319	256,450	211,898	82.6	132,621	47,551
May	235,794	49,107	266,708	220,750	82.8	127,217	46,375
June	223,901	53,560	266,708	204,468	76.7	130,484	43,480
July	203,741	49,969	256,450	190,810	74.4	132,265	62,056
August	233,104	47,709	276,966	213,626	77.1	117,009	48,108
September	228,880	45,271	246,192	*217,361	88.3	116,197	53,344
October	*245,133	*43,627	289,440	*240,930	*83.2	*127,989	*73,235
November	*235,228	*47,693	268,000	*222,693	*83.1	*136,100	*49,982
December	197,029	55,624	268,000	196,164	73.2	148,906	43,447
Total (year)	2,667,207	.....	3,182,330	2,512,059	78.9	.....	.....

* Revised.

Chemical Engineering Courses

The University of Michigan has just published a new bulletin of courses in chemical engineering, showing the opportunities for special study and facilities available at the university. Certain of the courses are of direct importance to paper technologists.

The Department of Engineering Research has important contacts with the chemical industry and several industrial fellowships will be available for graduate students next year for which application should be made by April 1.

Copies of the bulletin may be secured by writing the Chemical Engineering Department, University of Michigan, Ann Arbor, Mich.

The Engineer and Cost Accountant*

By T. W. Eustis, Frigidaire Corp., Dayton, Ohio

Your committee assigned the subject, "The Engineer and Accountant—Their Joint Problems," to me without outlining the particular phase they wanted developed, so that my comments will be very general in order to be of any interest. A great variety of accountants is represented in your list of members. In accordance with good engineering practice, I first made an analysis of your membership list to see what occupations were represented and how many probably had direct contact with engineers. You can see from this list that the big majority can not get along without engineers. I wonder how many get along with them. I found that there were:

Metal working	23	Office equipment	6
Miscellaneous	18	Educational	4
Public accounting	16	Printing	3
Building material	8	Food products	3
Clothing	8	Financial	2
Public utilities	5	Lawyer	1
Light manufacturing	6		
		Total	102

It would be interesting to know how many accountants here have frequent contacts with engineers or should have, if they do not.

My purpose is to show that accountants and engineers have the same objectives, that their work is closely connected, that the opportunities for each are greatly increased by the help of the other, and to discuss some examples of their joint problems with some solutions.

Their Common Objective

Their common objective is "To Make a Satisfactory Profit." Some may talk about the pride of accomplishment, the reward of service or working for the fun of it. But, after all, unless a satisfactory profit results from our combined efforts, there is not much permanent pleasure, pride, or "potatoes" in our lives. The casualty lists of business failures and the various reports that indicate that only half the firms in business are making a profit are a challenge to the engineer and the accountant. Who are in a better position to help the management find out what is wrong, to analyze every phase of the operations, get the facts and plan the remedy than the engineer and the cost accountant?

What must they find out? There is only one answer, and that is how "To make a better product at a lower cost." That idea applies to services as well as goods, of course.

How Is It To Be Done?

1—By finding out where we stand financially. This is the field of the general accountant rather than the cost accountant.

2—By breaking down the whole record of costs, laying it wide open, so it may be studied in all its component parts. This requires the same sort of analysis, by the cost accountant as by the engineer.

3—The engineer next makes an analysis of the physical details of the actual operations to which the cost accountant has pointed his finger.

4—Between them, finding waste that can be eliminated whether it is in materials, men, machinery, methods, money or management.

5—After the location of the waste is determined, they must plan changes to eliminate the waste. Most of the changes must be planned by engineers, but every step in the process must be checked by estimates. And the estimates must be based on the cost records.

I am using the term engineer in the broad sense to include every one who has to make plans covering physical problems. That includes every step from the research engineer, designer, production engineer, specification man, time study and many more clear through to the crating and sales engineer.

The cost accountant's field formerly was quite clearly defined until the use of standard costs began and the cost accountant started to prepare profit and loss statements by tabulating the variances from the standards.

Dividing Line Broken Down

The increasing use of statistics, budgets, estimates, and forecasts, which require both engineering and accounting methods, have broken down the dividing lines between the two until one can hardly distinguish them any more. They both have the same problem when it comes to selling their ideas. All their work is wasted unless their ideas can be sold. Selling ability is of course very necessary, but the prime essential is confidence. The management must have confidence in their ability to correctly interpret results and plan wisely for the future. Their joint problem here is accuracy, thoroughness, judgment, and imagination. The employees must have confidence in their fairness in determining and seeing that they are correctly paid in proportion to their effort in some form of wage incentive system. This is the foundation for a satisfactory labor situation in any factory. The bankers must have confidence, particularly when it comes time for expansion. Then the proven ability to budget and forecast accurately what the management can carry out is generally the foundation for increased credit.

Confidence generally comes slowly as a result of successful performance. This is especially true in a comparatively new field like cost control. However, the constantly increasing competition and size of manufacturing operations is forcing the development very rapidly, so it behooves the engineer and accountant to solve their joint problems rapidly, in order that they may measure up to their responsibilities and opportunities when the time comes.

Responsibilities and Opportunities

What are their responsibilities and opportunities? It can all be summed up by stating that the management must look primarily to them for sound guidance in steering the way to a higher plane of profits by building the business on the relation of capacity to requirements. Henry Ford started that game of forecasting how many people would buy if the price was brought down to some unheard of point, then going ahead building plants to supply that capacity, and selling the product at the price based on capacity operation, relying upon the price being so attractive that it would soon fill the plant with orders. It takes confidence in the engineers and accountants to embark on such a huge program.

It is the engineer and the cost accountant upon whom we must rely to determine how far the Ford principles can be adapted to other and smaller industries. In smaller plants the volume is seldom so great that one man can be limited to a single operation as they do so generally under the Ford scheme. Neither can the consecutive operations in straight line production be so uniformly sub-divided that all employees are working at approximately the same efficiency. This condition presents another problem to the engineer and accountant to determine under mass production not directly with Ford's, whether the uniform wage or some wage incentive plan such as group bonus, gives the best over-all economy.

Must Do Educational Work

The accountant and engineer must do a great deal of educational work. The first job, of course, is to educate the boss and all of his co-workers to "Plan your work and work your plan." Unless this is done, the solutions to the problems will come slowly.

Another major responsibility of the engineer and cost accountant, and there are many problems connected with it, is to preach the gospel of the constancy of change of the entire organization—to point out the absolute necessity for a continuous program of changes if we are to progress and prosper uniformly. It took Mr. Ford a long while to learn that lesson.

What else can we preach? There are many more fundamentals

* N. A. C. A. Bulletin.

of successful business that should be presented by the engineer and cost accountant. One of the most important is the displaying the true facts regarding the policy of taking business below normal cost. The answers to the questionnaire conducted a year or so ago in the N. A. C. A. by Mr. Stevenson showed that 75 per cent agreed that it was very harmful for business and yet 80 per cent admitted that they would do it, if necessary. In the majority of cases a reliable knowledge of plant capacity and effect of volume on costs and profits would clearly show the folly of such practice, and would pave the way towards a healthy, steady growth.

Necessary to Budget for It

To carry on such a program, it is necessary to budget for it, starting with the ploughing back into the business enough of the profits for research work, product development, improvement of machinery and processes, coming closer to the source of materials as Mr. Ford does, standardizing and simplifying our line under Mr. Hoover's direction and yet be so organized as to change quickly to meet the public fancy.

Who are better scouts to foresee this necessity, to teach the idea and plan the race in competition than the engineer and the accountant? Do not think that I am minimizing the responsibility and performance of the manager. But how far can he move without the information and advice from the engineer and the accountant? And how much more effective he becomes if he is served with information prepared with the management viewpoint. What better training can you imagine for management than that of the engineer and the accountant? And yet, how few realize the possibilities that are given them? As to the reasons for that, that is another story for another meeting.

Are there any other occupations that are so interwoven, so dependent on each other, or that offer such possibilities for profit?

Some Specific Problems

I have been talking about the relation of the engineer and accountant and their general problems. Now, what are some of the specific ones?

The principles are identical but the details are different everywhere. Mr. G. Charter Harrison told us in Dayton recently that he had never installed two cost systems exactly alike.

The first step is for the engineer to get together with the cost accountant and get their houses in order. Last month at the Machine Tool Builders conference, Albert Grover took as his motto, "Effort spent on incorrect costs is a complete loss." Is there anything more annoying and harmful than when it is discovered that some decision often involving large amounts of money, is all wrong because it was based on incorrect costs. If you are determined to put an end to that condition, the best way to start is to get your engineer to check up on the cost system from the standpoint of the user.

Facts That Will Be Brought Out

The facts will be brought out if these three questions are conscientiously investigated with an open mind:

1—Do the cost records give the information wanted for real control of manufacturing operations to insure a profit, or do they only provide an autopsy after the corpse is cold?

2—Do the cost records give any unnecessary information? How many reports started to meet a special situation are still being ground out years after the need has passed?

3—Are they worth what they cost?

The engineer makes a very useful critic in such an investigation. Out of it should come increased confidence and appreciation of the cost records. Just try it out. Ask your engineer friend and associate to make a survey of the output of the cost department. In turn, he must help the cost accountant to check up on the accuracy of report of operations made by the factory, the accuracy of engineering data used for distributing overhead expense, such as floor space, power consumption, maintenance obsolescence, and depreciation. Harry Baldwin, no doubt, told you a lot about the importance of a correct accounting for depreciation last month.

After the cost methods are telling the true story and the engineer and accountant are in the proper frame of mind for not only keeping step, but playing the tune for progressing through change, then the real work begins of eliminating waste.

Provides Many Problems

The modern method of budgeting complete operations for the year ahead, guided throughout by the return on the investment desired, provides many problems. After the budget is balanced, the best insurance that it will be carried out is to break down the budget into standard amounts for material, labor, overhead, inventory and so on for each department. In order to carry out these standards, the engineer must develop specifications for material, standard times for labor operations, flexible budgets for overhead, including standard variable rates and material control methods that will produce standard turnover.

The quickest results can be obtained if cost reports are speeded up, item by item until they become a source of red-hot information for the operating men. The customary first steps in that direction are daily reports of scrap, overtime, material waste, manufacturing delays, and other losses. Daily distribution of expense labor comes next. Daily distribution of expense material offers more difficulties, but should follow promptly. All of this is preparatory for and naturally leads to the use of standard costs and control by variances from the standards instead of using actual costs.

Requires Closest Cooperation

Every step outlined above requires the closest cooperation of the engineer and accountant in solving the problems. The two major difficulties in the way are the tendencies of people to *resist the new* and *resent the criticism* that may be inferred as a result of proposing a change from their present methods. These can be best combatted by pointing out the irresistible march of progress and bite of competition which requires doing a better job every day.

We might talk about educational methods both in schools and industry, but they will come when the demand arises. The first need is to arouse the interest and "start the itch" to use the power just waiting and begging for control by the engineer and accountants.

I wonder if Harry Baldwin last month used the same quotation that he did in Dayton. Even if he did, it is worth repeating, because it is so appropriate. He quoted from a recent book by Sir Mart Jenkenson:

"In the values on a balance sheet
One asset is omitted.
And its worth I want to know,
That asset is the value
Of the men who run the show."

Gentlemen, accountants and engineers, if you believe that you are the "men who run the show," get together, get busy, and do it.

Analytical Methods

ERIK OEMAN. *Massanalytischen Verfahren und deren Anwendung in Zellstoffabriken.* Mit Anhang: Chemische Einwirkung der schwefligen Säure auf organische Stoffe in der Sulfitlauge. Berlin, Verlag von "Zellstoff und Papier," 1928. 119 pages. Price, 5 RM.

This work is a translation from the Swedish language into the German of five articles by Erik Oeman, of the University of Stockholm. The titles indicate the scope of the articles: Determination of sodium hydroxide, p. 1-8; Indicators for the paper industry, p. 9-32; Hydrogen ion concentration in solutions, p. 33-85; Methods for investigating black liquor and for controlling the sulphate digestion process, p. 86-97; Chemical action of sulphurous acid upon the organic compounds in sulphite waste liquors, p. 98-119. Most of these articles have appeared in the German trade journals, some of them have been translated into English and all have been covered by the abstract section of the Technical Section of the Paper Trade Journal.—C. J. WEST.

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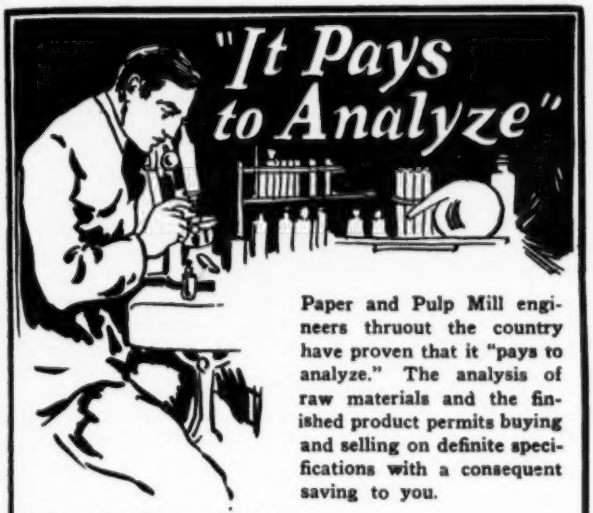

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Hooker Plant at Tacoma Completed

The Hooker Electrochemical Company has just completed and put in operation at Tacoma, Wash., one of the largest chemical plants in the West. The plant has an initial capacity of thirty tons of 70 per cent caustic soda per day and twenty-six tons of cell chlorine. Electric power is received as alternating current at 16,000 volts, 4,000 volts and 110 volts. The 16,000 volt current is stepped down by air cooled transformers to approximately 350 volts and is then changed to direct current by the use of rotary converters manufactured by the Westinghouse Electric and Manufacturing Company. Each rotary converter has a capacity of about 2,000 hp. and supplies the necessary electricity for the decomposition of the brine solution in the cells. The 4,000 volt current is stepped down also by the use of outside air cooled transformers to 440 volts for the operation of the motors throughout the plant while the 110 volt supply provides the necessary current for lighting.

Various Methods of Transferring Loads

There are various methods of transferring loads from one circuit to another so as to secure constant supply of power for the motors and for the lights. The Townsend cells are erected in a building about 350 feet long which is immediately adjacent to the power station containing the rotary converters. In the cell house are automatic and remote control switches by which the rotary converters are operated so that in the power station no attendance is required.

A considerable quantity of steam is utilized in the evaporation of the caustic liquor and in other process work throughout the plant. This steam is supplied by two Babcock and Wilcox boilers fired either by mill refuse or by oil. The oil burners are placed at the rear of the boilers while the dutch oven and feeding apparatus for mill refuse are placed at the front end of the boilers. Although the equipment is designed for high steam pressure the normal operating condition at the start will involve about 150 pounds pressure.

The Caustic House

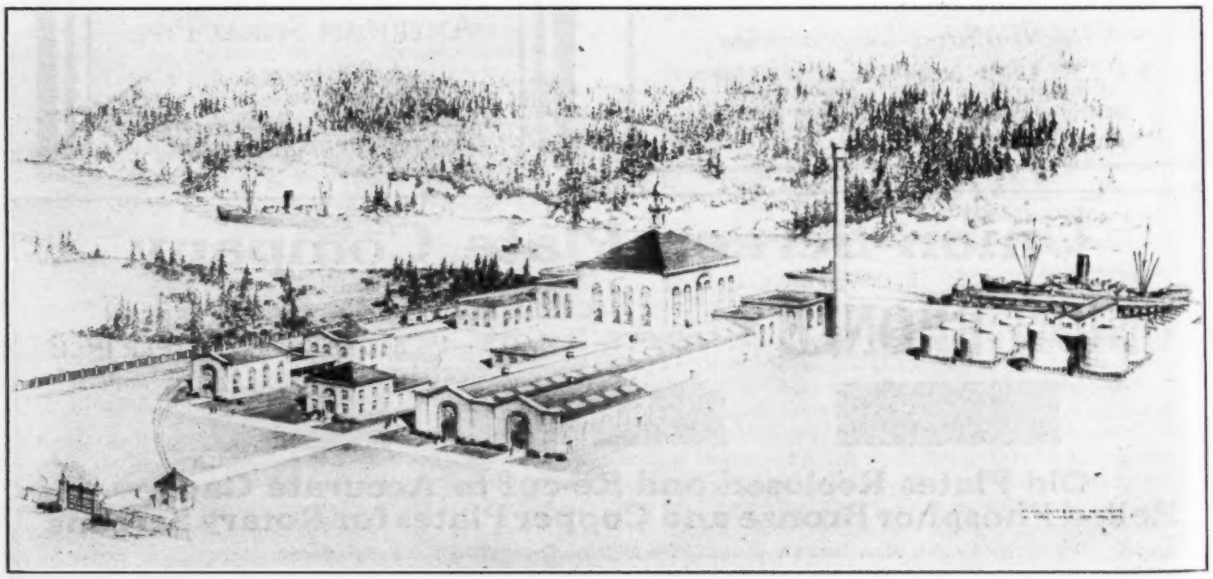
In a separate building known as the caustic house is carried on the purification of the caustic liquor which comes from the cells, mention of which has previously been made. The two steps of compression and refrigeration used in the manufacture of liquid chlorine are housed in separate but adjacent buildings between which are located storage tanks tested to high pressure and heavily insulated. The tankage used for the storage and handling of various liquids is mostly located outside of the buildings, part of the tanks being of riveted construction and part electric welded.

Salt Storage Tanks

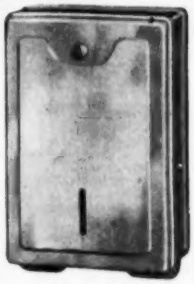
The salt storage tanks have a capacity of about 300,000 gallons each while the tanks utilized for the purification and storage of brine are approximately 75,000 gallons each. There are two 100,000 gallon fuel oil storage tanks surrounded by proper retaining walls to meet the legal requirements of the City of Tacoma and to be in accord with the best modern practice. To give an idea of the size of the installation it is of interest to note that the tankage installed has a total capacity of about two and a half million gallons. Large volumes of water are required for the condensation of steam and for cooling purposes, and to meet this requirement two four-million-gallon per day pumps have been installed which draw salt water from the adjacent waterway. The fresh water required is supplied from the mains of the City of Tacoma.

General Facilities of Plant

The general facilities of the plant include a two story office, a machine shop in which the complete absence of shafting and belting is noticeable because of the fact that all machines are driven by directly connected motors, a locker room of modern sanitary construction and various loading platforms for the receiving and shipping of materials. The railroad sidings are not electrified but the cars which are delivered by the Belt Line Division of the Department of Public Utilities are handled within the plant by a gasoline locomotive. Dredging has recently been completed to give thirty-five feet of water at low tide at each of the two docks; one dock which is about 100 feet long is intended for the loading and unloading of barges and small boats while the other dock, which is 300 feet long, is for the handling of large vessels. The boiler house stack, which is unique in design, rises to a height of 200 feet above the ground. Many hundred piles were used in the construction of the dock, of the bulkhead and for the foundations of some of the heavier buildings and apparatus.



PLANT OF THE HOOKER ELECTROCHEMICAL CO. AT TACOMA, WASH.



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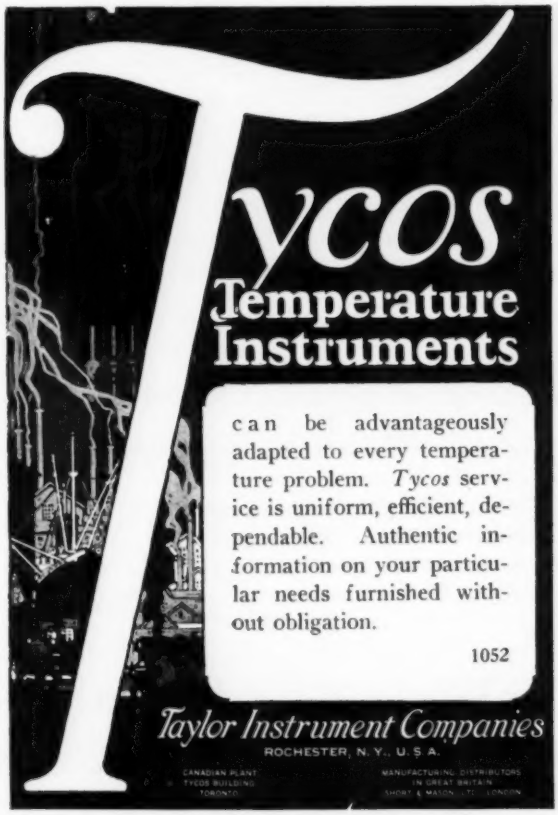
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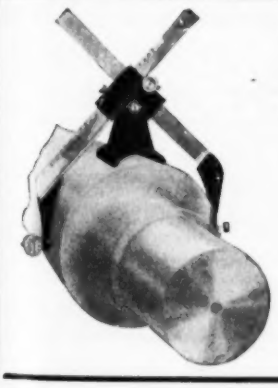

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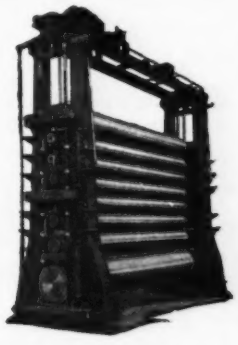

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NEW YORK IMPORTS

WEEK ENDING FEBRUARY 9, 1929

SUMMARY

Cigarette paper .....1,682 cs.
Wall paper .....84 bls., 8 cs.
Paper hangings .....14 bls., 10 cs.
News print .....396 rolls
Printing paper .....108 rolls, 124 bls., 78 cs.
Wrapping paper .....19 bls., 40 cs.
Packing paper .....4 bls., 30 cs.
Cellophane paper .....3 cs.
Writing paper .....13 cs.
Colored paper .....77 cs.
Decalcomania paper .....60 cs.
Tissue paper .....90 cs.
Baryta coated paper .....85 cs.
Gold coated paper .....9 cs.
Metal paper .....36 cs.
Metal foiled paper .....5 cs.
Surface coated paper .....3 cs.
Coated paper .....50 cs.
Drawing paper .....9 cs.
Filter paper .....9 cs.
Marble paper .....8 cs.
Waxed paper .....2 cs.
Card board .....23 cs.
Stencil paper and ink .....84 cs.
Envelopes .....29 cs.
Miscellaneous paper ....227 rolls, 218 bls., 31 cs.

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Charts Corp., Asuka Maru, Osaka, 2 cs.
P. J. Schweitzer, Pres. Monroe, Marseilles, 109 cs.
British American Tobacco Co., Majestic, Southampton, 92 cs.
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De Manduit Paper Corp., Indep. Hall, St. Nazaire, 392 cs.
Standard Products Corp., De Grasse, Havre, 152 cs.

WALL PAPER

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F. J. Emmerich, Westphalia, Hamburg, 17 bls.
Globe Shipping Co., Westphalia, Hamburg, 9 bls.
F. J. Emmerich, American Merchant, London, 1 ble.
F. J. Emmerich, Doric, Liverpool, 13 bls.
Hudson Freight Forwarding Co., Majestic, Southampton, 1 cs.
F. A. Binder, Pres. Harding, Bremen, 7 bls.
G. J. Hunken, Pres. Harding, Bremen, 1 cs.

PAPER HANGINGS

W. H. S. Lloyd & Co., American Merchant, London, 14 bls.
Whiting & Patterson Co., Inc., Majestic, Southampton, 10 cs.

NEWS PRINT

Parsons & Whittemore, Inc., Dresden, Bremen, 197 rolls.
Times Union, Gripsholm, Gothenburg, 59 rolls.
Hudson Trading Co., Mexicano, Oslo, 140 rolls.

PRINTING PAPER

J. I. Bernitz, England Maru, Hamburg, 124 bls.
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Hoboken Trust Co., G. Washington, Bremen, 4 cs.
Dingelstedt & Co., G. Washington, Bremen, 13 cs.
Keuffel & Esser Co., Westphalia, Hamburg, 108 rolls.
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H. Reeve Angel & Co., Inc., American Merchant, London, 7 cs.
A. Giese & Son, Majestic, Southampton, 2 cs.

MARBLE PAPER

E. Daiber, Samland, Antwerp, 8 cs.

WAXED PAPER

American Express Co., Athenia, Liverpool, 2 cs.

CARD BOARD

Eastman Kodak Co., Samland, Antwerp, 23 cs.

STENCIL PAPER AND INK

Arlac Dry Stencil Co., Westphalia, Hamburg, 84 cs.

ENVELOPES

J. Beckhard, Dresden, Bremen, 29 cs.

MISCELLANEOUS PAPER

Judson Freight Forwarding Co., Sacandaga, Rotterdam, 2 cs.
Hensel, Bruckman & Lorbacher, Dresden, Bremen, 3 cs.
Steffens, Jones Co., Asuka Maru, Kobe, 2 cs.
H. Reeve Angel & Co., Inc., Asuka Maru, Yokohama, 4 cs.
Steiner Paper Corp., Hague Maru, Kobe, 2 cs.
M. M. Cohen, Gripsholm, Gothenburg, 227 rolls, 24 bls.
C. K. MacAlpine & Co., Gripsholm, Gothenburg, 194 bls.
E. H. Sergeant & Co., Gripsholm, Gothenburg, 1 cs.
C. R. Ruegger, Waukegan, Havre, 4 cs.
Hensel, Bruckman & Lorbacher, De Grasse, Havre, 11 cs.
Standard Products Corp., De Grasse, Havre, 1 cs.
F. J. Emmerich, De Grasse, Havre, 1 cs.

RAGS, BAGGINGS, ETC.

Union Bank & Trust Co., Sorvard, Barcelona, 109 bls. rags.
Royal Bank of Canada, Dresden, Bremen, 92 bls. cotton waste.
Interstate Trust Co., Dresden, Bremen, 45 bls. rags.
Interstate Trust Co., Dresden, Bremen, 61 bls. bagging.
Van Oppen & Co., Dresden, Bremen, 35 bls. thread waste.
International Purchasing Co., Tomalva, Antwerp, 37 bls. bagging.
A. W. Fenton, Inc., England Maru, Hamburg, 30 bls. rags.
E. Butterworth & Co., Inc., Asuka Maru, Kobe, 93 bls. rags.
Castle & Overton, Inc., Asuka Maru, Kobe, 150 bls. rags.
A. W. Fenton, Inc., G. Washington, Bremen, 22 bls. rags.
Bank of The Manhattan Co., G. Washington, Bremen, 119 bls. cotton waste.
American Exchange Irving Trust Co., G. Washington, Bremen, 88 bls. cotton waste.
Castle & Overton, Inc., Westphalia, Hamburg, 46 bls. rags.
E. J. Keller Co., Inc., Westphalia, ——, 3 bls. rags.
E. J. Keller Co., Inc., Vincent, ——, 57 bls. bagging.
E. J. Keller Co., Inc., Vincent, ——, 51 bls. new cuttings.
D. M. Hicks, Inc., Vincent, Havre, 35 bls. rags.
Castle & Overton, Inc., Vincent, Havre, 306 bls. bagging.
Castle & Overton, Inc., Vincent, Havre, 56 bls. rags.
Castle & Overton, Inc., Cameronia, Glasgow, 61 bls. bagging.
T. D. Downing & Co., Cameronia, Glasgow, 102 bls. paper stock.
A. W. Fenton, Inc., Cameronia, Glasgow, 53 bls. paper stock.
Manufacturers Trust Co., Ohio Maru, Oran, 442 bls. rags.
Myers Lipman Woolstock Co., Athenia, Liverpool, 44 bls. rags.
Equitable Trust Co., Athenia, Liverpool, 15 bls. rags.
Standard Bank of South Africa, Athenia, Liverpool, 85 bls. rags.
Guaranty Trust Co., Exarch, Bari, 37 bls. rags.
Fidelity Trust Co., Hektor, Barcelona, 64 bls. rags.
E. Mayer, Pres. Harding, Bremen, 47 bls. rags.
A. W. Fenton, Inc., Pres. Harding, Bremen, 11 bls. rags.
W. Steck & Co., Clairton, Manchester, 37 bls. rags.
State Bank & Trust Co., Clairton, Manchester, 34 bls. rags.
W. Shapiro & Sons, Clairton, Manchester, 12 bls. rags.
E. Butterworth & Co., Inc., Clairton, Manchester, 103 bls. rags.
Marquardt Hewitt Corp., Clairton, Manchester, 49 bls. bagging.
Castle & Overton, Inc., Clairton, Manchester, 5 bls. rags.
American Exchange Irving Trust Co., Sac City, Rotterdam, 19 bls. bagging.
Bank of The Manhattan Co., Sac City, Rotterdam, 43 bls. rags.
Katzenstein & Keene, Inc., Indep. Hall, Bordeaux, 48 bls. rags.
E. J. Keller Co., Inc., Indep. Hall, ——, 45 bls. rags.
Salomon Bros. & Co., Indep. Hall, St. Nazaire, 40 bls. rags.
V. Galaup, Waukegan, Havre, 46 bls. rags.
Salomon Bros. & Co., Waukegan, Havre, 7 bls. rags.

OLD ROPE

Brown Bros. & Co., Sacandaga, Rotterdam, 187 coils, 33 bls.
Brown Bros. & Co., Ohio Maru, Oran, 27 coils.
W. Steck & Co., Clairton, Manchester, 42 bls.
N. E. Berzen, Indep. Hall, Bordeaux, 1,990 rolls.
Brown Bros. & Co., Sac City, Rotterdam, 59 bls., 9 coils.
E. J. Keller Co., Inc., Tomalva, ——, 55 bls.

CASEIN

T. M. Duche & Sons, Castilian Prince, Buenos Aires, 417 bags, 25,020 ks.
A. Klipstein & Co., Vincent, Havre, 329 bags, 25,000 ks.

WOOD PULP BOARDS

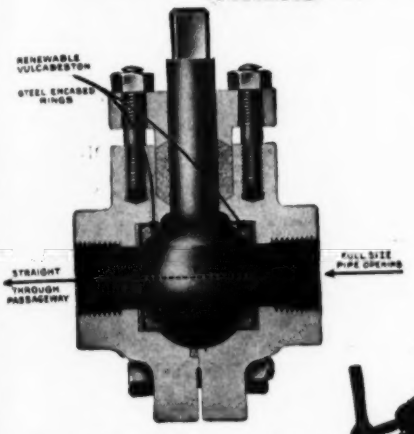
International Forwarding Co., Westphalia, Hamburg, 47 bls.
C. K. MacAlpine & Co., Gripsholm, Gothenburg, 10 bls.
Chatham & Phoenix National Bank, Gripsholm, Gothenburg, 31 bls.

(Continued on page 74)

FAIRBANKS' "SPHERO"

The Perfect "Blow-Off" Valve

PATENTED



Especially adapted to the requirements of the paper manufacturing industry. The 6 inch and 8 inch sizes, with flanged ends are used extensively as blow-offs on digesters.

Write for Special Bulletin

THE FAIRBANKS COMPANY

BOSTON NEW YORK PITTSBURGH

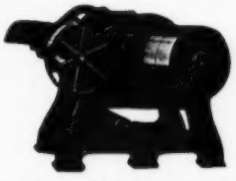
Factory: Binghamton, N. Y.

Distribution in ALL Principal Cities

GIANT

RAGS — BURLAP
BAGGING — ROPE

JUTE BUTTS, MAGAZINES, CATALOGS OLD PAPERS, THREAD WASTE AND ALL GRADES OF RAGS CUT QUICKLY AND EFFICIENTLY WITH THE



TAYLOR, STILES & COMPANY GIANT REGISTERED RIEGELSVILLE, N.J. U.S.A.

This is the GIANT 2A CUTTER WITH A CAPACITY OF 3000 lbs. PER HOUR

GIANT RAG CUTTERS HAVE CAPACITIES OF FROM 1 to 8 tons per hour.

THE STANDARD OF THE WORLD FOR 59 YEARS

TAYLOR, STILES & COMPANY

RIEGELSVILLE, N. J.

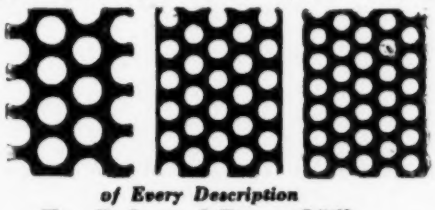
CANADIAN REPRESENTATIVES

Waterous Engine Works Company, Ltd., Brantford, Ont., Canada

SOLE AGENTS FOR EUROPE

R. J. Marx, 133-139 Finsbury Pavement, London, E. C.

PERFORATED METALS



of Every Description

For Pulp and Paper Mills

THE HARRINGTON & KING PERFORATING CO

5652 Fillmore St., Chicago, Ill.

NEW YORK OFFICE: 114 Liberty St.

NOW!

PARIS BLACK EXTRA

in

FIBRE CONTAINERS

Our Paris Black Extra, made expressly for the paper industry, is now available in solid Fibre Containers, holding—four—12½ lb. Paper Bags. This represents 25% freight saving and convenience in storing and handling.

The HELLER & MERZ COMPANY

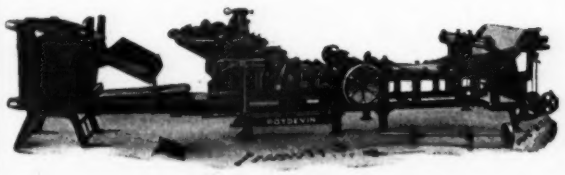
505 Hudson St., New York

Boston 287 Atlantic Ave. Chicago 146 W. Kinzie St. Springfield, Mass. 40 Albert St. Philadelphia 114 Market St.

Factory—NEWARK, N. J.

NEW POTDEVIN SACK

CEMENT BAG MACHINE



3 Sizes—NAIL—FLOUR—CEMENT

2-COLOR RUBBER TYPE PRINTING

POTDEVIN MACHINE CO.

1223 38th Street, Dept. 4, Brooklyn, N. Y., U. S. A.

Phones: Windsor 1700-1701-1702

Imports of Paper and Paper Stock

(Continued from page 72)

WOOD PULP

Price & Pierce, Ltd., Drottningholm, Gothenburg, 750 bls. wood pulp.
Bulkley, Dunton & Co., Copenhagen, ——, 12,895 bls. wood pulp.
E. J. Keller Co., Inc., Dresden, ——, 651 bls. wood pulp.
E. M. Sergeant & Co., Gripsholm, Gothenburg, 375 bls. sulphite.
E. M. Sergeant & Co., Gripsholm, Gothenburg, 299 bls. dry soda pulp.
Johanson, Wales & Sparre, Inc., Gripsholm, Gothenburg, 329 bls. dry soda pulp.
Perkins, Goodwin & Co., Mexicano, Drammen, 375 bls. sulphate.
Atterbury & McKelvey, Mexicano, Tofte, 540 bls. sulphite.
O. E. Kiaer, Mexicano, Greaker, 750 bls. sulphite.
J. Andersen & Co., Mexicano, Greaker, 2,160 bls. sulphite.

PHILADELPHIA IMPORTS

WEEK ENDING FEBRUARY 9, 1929

J. M. Hagy Waste Works, Vincent, Havre, 23 bls. rags.
Brown Bros., Vincent, Havre, 152 bls. rags.
Anglo South American Trust Co., Vincent, Havre, 110 bls. old rope.
Castle & Overton, Inc., Vincent, Havre, 163 bls. rags.
Katzenstein & Keene, Inc., Vincent, Havre, 114 bls. rags.
E. J. Keller Co., Inc., Vincent, ——, 35 bls. bagging.
E. J. Keller Co., Inc., Vincent, ——, 50 bls. rags.
Atterbury Bros., Inc., Mexicano, Oslo, 200 bls. chemical pulp.
E. M. Sergeant & Co., Mexicano, Oslo, 150 bls. chemical pulp.
J. Andersen & Co., Mexicano, Drammen, 1,000 bls. sulphite.
Atterbury Bros., Inc., Mexicano, Drammen, 625 bls. chemical pulp.
Atterbury & McKelvey, Mexicano, Tofte, 3,450 bls. sulphite.
Guaranty Trust Co., Brenta, Messina, 66 bls. rags.
Guaranty Trust Co., Exarch, Bari, 184 bls. rags.
Katzenstein & Keene, Inc., Indep. Hall, Bordeaux, 421 bls. rags.
A. W. Fenton, Inc., Indep. Hall, Bordeaux, 344 bls. rags.
Brown Bros. & Co., Indep. Hall, Bordeaux, 218 bls. rags.
Castle & Overton, Inc., Indep. Hall, Bordeaux, 118 bls. rags.
E. J. Keller Co., Inc., Indep. Hall, ——, 81 bls. rags.
Salomon Bros. & Co., Indep. Hall, St. Nazaire, 178 bls. rags.
Katzenstein & Keene, Inc., Indep. Hall, St. Nazaire, 130 bls. rags.
Castle & Overton, Inc., Indep. Hall, St. Nazaire, 45 bls. rags.
E. J. Keller Co., Inc., Indep. Hall, ——, 154 bls. rags.
A. Hurst & Co., Waukegan, Havre, 12 bls. rags.
W. Steck & Co., Waukegan, Havre, 51 bls. old rope.
Anglo South American Trust Co., Waukegan, Havre, 145 bls. old rope.
N. E. Berzen, Waukegan, Havre, 55 bls. old rope.
G. Mathes & Co., Waukegan, Havre, 20 bls. rags.
Katzenstein & Keene, Inc., Waukegan, Havre, 178 bls. rags.
D. I. Murphy, Waukegan, Havre, 305 bls. rags.
Salomon Bros. & Co., Waukegan, Havre, 44 bls. cotton waste.
W. Steck & Co., Waukegan, Havre, 87 bls. rags.
Bulkley, Dunton & Co., Amasis, ——, 150 bls. wood pulp.
Castle & Overton, Inc., Takatoyo Maru, Japan, 50 bls. rags.
Castle & Overton, Inc., Hagen & Zenada, Germany, 4,268 bls. wood pulp.
Castle & Overton, Inc., Ala, Germany, 1,190 bls. wood pulp.
Castle & Overton, Inc., Porta, Germany, 80 bls. rags.
Castle & Overton, Inc., Bristol City, England, 112 bls. rags.
E. J. Keller Co., Inc., Zenada, ——, 84 bls. rags.

BOSTON IMPORTS

WEEK ENDING FEBRUARY 9, 1929

Banco Com'l Italiane Trust Co., Ohio Maru, Leghorn, 412 bls. rags.
Atkinson, Haserick & Co., Pres. Monroe, Genoa, 5 cs. paper.
Castle & Overton, Inc., Ammon, Germany, 3,802 bls. wood pulp.
Castle & Overton, Inc., Ala, Holland, 1,380 bls. wood pulp.
Bulkley, Dunton & Co., Etna, ——, 3,750 bls. wood pulp.
Bulkley, Dunton & Co., Blommersdyk, ——, 278 bls. wood pulp.
Bulkley, Dunton & Co., Copenhagen, ——, 3,875 bls. wood pulp.

BALTIMORE IMPORTS

WEEK ENDING FEBRUARY 9, 1929

Congoleum Nairn Co., Indep. Hall, Bordeaux, 539 bls. rags.
Congoleum Nairn Co., Indep. Hall, St. Nazaire, 127 bls. rags.
Castle & Overton, Inc., Zenada & Liguria, Germany, 5,101 bls. wood pulp.
Castle & Overton, Inc., Bellbuckle, Havre, 382 bls. rags.
Bulkley, Dunton & Co., Yokohama, ——, 9,965 bls. wood pulp.
Bulkley, Dunton & Co., Tampa, ——, 5,175 bls. wood pulp.
Bulkley, Dunton & Co., Trolleholm, ——, 2,900 bls. wood pulp.

To Audit Colorado Pulp & Paper Co.

DENVER, Colo., February 11, 1929.—District Judge Samuel W. Johnson, sitting in the district court at Brighton, granted a motion presented to the court by Joseph Buchhalter, which provides for a complete audit and survey of all books and records of the Colorado Pulp and Paper Company during the period that George W. Beck, a Denver insurance man, has been receiver.

In granting the motion, Judge Johnson declared that he did not now have the authority to order an audit of the books of other firms for whom Mr. Beck is receiver.

"But during the course of the audit of the books of the Colorado Pulp and Paper Company, should any evidence of irregularities in expenditures appear, the auditors appointed by the court will appear before me and I will decide then as to what action will be taken," Judge Johnson said.

Three different auditors, representing various persons interested in the receivership, will cooperate in making a complete audit and survey of all the books and records of the company, according to the terms of Judge Johnson's order.

M. Lindsey, a certified public accountant, will represent Joseph Buchhalter, the petitioner in the motion; Arthur L. Baldwin, a Denver auditor, will represent the receiver, while a third man will be named by Attorney Ernest Morris, representing Charles Myers, former president of the concern and a heavy bondholder.

Although in his petition Mr. Buchhalter volunteers to pay all expenses connected with the audit of the firm's books, Judge Johnson reserved the right to charge the expenses to the receivership if he sees fit to do so.

The motion filed by Mr. Buchhalter accuses Mr. Beck of having made personal profit, beyond the amount allowed him by the court, in the operation of the pulp and paper company. The petition further states that there is a possibility of items of expenditures having been duplicated in connection with other receiverships conducted by Mr. Beck.

New Dietz Interfolding Towel Machine

A new product of the Dietz Machine Works of Philadelphia, builders of toilet paper perforating and paper slitting and rewinding machinery, is their Interfolding Towel Machine.

This machine takes jumbo rolls 26½ inches wide up to 40 inches in diameter and converts into two rows of interfolded towels 13¼ inches wide by 10 13/16 inches long, which is known as the senior size. It is also arranged to take paper 22½ inches wide for converting into towels 11¼ inches wide by 10 13/16 inches long, known as the junior size. These two sizes of towels may be run without making any adjustments on the machine.

Automatic counting is done by means of small ink mark on every 150th towel. The speed of the machine is 740 towels per minute, or at the rate of 355,200 towels (94 cases of 25 packs) in eight hours' constant running time. This enables a fairly efficient operator to produce 70 or more cases per day of eight hours, allowing for stoppage, putting on jumbo rolls, etc.

The towels are cut off with Vee notched knives of a coarse pitch, five to the inch, making a well-liked serated edge. Two rows of interfolded towels are fed out horizontally on a conveniently arranged table, from which an operator removes them for banding and packing.

The machine is an engineered product and is well built and substantially constructed. A feature is large aluminum gear guard, light in weight, covering effectively all gears on outside of machine, and which can be removed in less than a minute for necessary oiling.

Starting and stopping is accomplished by means of a new disc type clutch, which may be adjusted in a few minutes to suit paper and conditions. The machine can be arranged with integral one horse power motor, or for line shaft drive.

The actual floor space that the machine requires for successful operation is 5 by 8½ feet.

CARPENTER WOOD PRODUCTS CORP. BELLOWS FALLS, VT.
END OF GRAIN
"WEARS LONGER"
REG. U.S. PAT. OFF.

End-of-Grain Suction Box Covers

A TRIAL INSTALLATION WILL DEMONSTRATE OPERATIVE ECONOMY AND BETTER PRODUCT

They are made from Sections of Green Vermont Maple, with the grain UPRIGHT The Wooden Sections are Diagonally Inserted between Acid Resisting Metal Rails Which are Permanently Screwed to Top Flange of the Suction Box.

WRITE FOR PRICES AND COMPLETE DESCRIPTION

THE EMERSON MANUFACTURING COMPANY LAWRENCE, MASS.

West Virginia Pulp and Paper Company

Manufacturers of

SUPERCALENDERED and MACHINE FINISHED BOOK and LITHOGRAPHIC PAPERS

Offset, Envelope, Bond, Writing, Cover and Music Paper, High Grade Coated Book, Index Bristol, Post Card, Kraft and Label Papers.

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Bleached Spruce Sulphite and Soda, Kraft Pulp

200 Fifth Avenue New York — 732 Sherman Street Chicago

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Sixth and Chestnut Sts., Philadelphia, Pa.

BROWN COMPANY'S ALPHA GRADES

of Purified Cellulose Fibre representing some of the valuable results of our many years of research in cellulose chemistry.

SUPER ALPHA

for strength in Tear, Fold and Mullen. Super Alpha equals the higher grades of rags in the manufacture of fine papers.

EASY-BEATING ALPHA

This is a grade developed for mills of limited beating capacity. While not giving results equal to Super Alpha, it produces wonderful paper on short beating.

REGULAR ALPHA

This is a grade midway between Super and Easy-Beating.

Use ALPHA for Quality

BROWN CO. FOUNDED 1852 Portland, Maine

TO SIMPLIFY SIZING ROOM PRACTICE

Hercules FF Wood Rosin is a good sizing agent for practically all papers made from unbleached pulp. Its water-proofing qualities are unexcelled and it has other distinctive and valuable properties.

HERCULES POWDER COMPANY (INCORPORATED)

943 Market Street

Wilmington Delaware

CASEIN

Our new Casein Department is under the management of G. W. DYNE, who needs no introduction to the Coated Paper Trade.

We invite your inquiries upon Domestic, Argentine, French and other imported Caseins.

American-British Chemical Supplies Inc.

16 East 34th Street, New York City.

New York Market Review

Office of the PAPER TRADE JOURNAL,
Wednesday, February 13, 1929.

Trading in the local paper market was moderately active during the past week. Due mainly to the fact that the spring buying season will soon be in full swing, the outlook for the future is more promising. Sales organizations of the leading paper houses are particularly busy just now. Quotations are fairly steady.

News print production is proceeding at about 80 per cent of capacity. Consumption is well up to average and stocks in hand are not excessive. At the time of writing the price situation has not apparently been solved, and the public announcement of the contract quotations for the current year is still anxiously awaited.

While the various grades of paper board are in good demand the price situation is very weak. Close observers of the market are disappointed at the apparent failure of the recent Washington conference to reach a satisfactory agreement regarding the stabilization of the industry. No radical changes were recorded in either the fine or coarse paper market and most of the business transacted was along routine lines.

Mechanical Pulp

Conditions in the ground wood market are slightly better than of late. The output has been restricted somewhat by weather conditions and other causes and stocks in hand are lower than at the corresponding period last year. The scheduled quotations are being maintained, in most instances, without difficulty.

Chemical Pulp

The chemical pulp market continues in a strong position. Bleached sulphite is still particularly firm. Imported bleached sulphite is quoted at from $3.65 to $4.40 and domestic bleached sulphite is offered at from $3.40 to $4.75. The demand for domestic bleached soda is steadily improving and this grade is selling at from $3.15 to $3.30.

Old Rope and Bagging

Both domestic and imported old rope are in persistent demand from the paper mills and offerings are being freely absorbed. Quotations on No. 1 manila rope are steady to firm. The bagging market continues rather quiet. Scrap bagging is in moderate request but gunny scrap is fairly active. Prices remain unchanged.

Rags

Paper mill interest in the domestic rag market is improving. The demand for cotton cuttings, in particular, is very encouraging. Mixed rags are also in excellent request. Prices rule steady. Conditions in the foreign rag market are slightly better. Dark cottons and linsey garments are moving in fair volume. Prices remain unaltered.

Waste Paper

No radical changes were reported in the paper stock market. The lower grades continue firm, influenced by heavy demand from the board mills. Book stock is not quite so active but ledger stock is moving fairly consistently. Quotations on the various grades are generally holding to previously recorded levels.

Twine

Demand for the various grades of twine is about normal for the season. With the approach of spring, wrapping paper will undoubtedly be moving in greater volume, and trading in the twine market will become more active. The price situation is fairly satisfactory and recently quoted levels are being maintained.

Outcome of Paper Board Conference

George W. Gair, president of the Robert Gair Company, New York, has sent the following letter to all the board mills represented at the recent meeting in Washington, D. C., called by Secretary of Labor Davis, with the object of improving conditions in the industry:

"The final outcome of the Washington Conference called by the Department of Labor on February 5 and of the secondary meeting held in the office of Secretary Davis that same evening, which was attended by all of those mills that had voted "No" on the resolution concerning the five-day operation, ended in the adoption of a resolution by thirteen out of the fifteen to change their vote and join with the major group which had voted favorably on this motion in the afternoon and thereby make it unanimous.

"The two companies who did not agree to this were The Fibre Products Company of California and the Kieckhefer Container Corporation of Delair. The representatives of these two companies promised to take the matter up with their principals and advise us whether they would agree.

"The Fibre Products Company later advised that they would abide by the resolution providing it was made unanimous, but the Kieckhefer Container Corporation advised Secretary Davis that they would make no change in their operating time.

"It was, therefore, decided to call off the proposed meeting on Friday, the 15th, for with this company unwilling to agree to the plan, many of the larger mills in the industry could not adopt it.

"It is regrettable that this announcement has to be made and that this plan, which meant so much to the industry, has failed of adoption and it is a great disappointment to Secretary Davis in his third and last attempt to help us only to find that his work has been done for nothing, but the five-day week is gaining in favor in industry generally all over the country and eventually the paperboard mills will come to it."

A. W. Towne Made Sales Promotion Manager

Announcement has just been made by Blake, Moffitt & Towne of the appointment of Arthur W. Towne as manager of sales promotion for San Francisco and Northern California Divisions. Mr. Towne has been advertising manager of the concern for a number of years and it is understood that he will continue to exercise general supervision of this activity.

In assuming the duties of his new office his principal effort will be toward coordinating the sales policy of the various Northern California Divisions, cooperating with the management and sales personnel at each point, giving attention to the promotion and development of new business and studying how the interests of the trade can best be served.

Mr. Towne is the grandson of one of the founders of the company which was established in San Francisco in 1855. He first became actively associated with Blake, Moffitt & Towne on his graduation from the University of California in 1916.

The following year, upon the outbreak of the War, he entered the army and after two years in the service as Lieutenant of Coast Artillery re-entered the firm's employ, devoting his attention to the selling end of the business.

As advertising manager for the past several years he has been closely connected with the work of standardization of brands and merchandise carried by the Blake, Moffitt & Towne chain as well as developing direct mail and trade paper advertising campaigns.

TRIUNE

AND

MULTIPLE PLY DRYER FELTS

Serve every Felt Purpose in an efficient and satisfactory way.

ENGLISH or BAKER WOVEN

Made in three, four, five and six ply—60" to 214" wide.

FITCHBURG DUCK MILLS
FITCHBURG, MASS.

For 83 Years Makers of Fine Faced Felts For Papermakers

LOCKWOOD'S DIRECTORY OF THE PAPER and ALLIED TRADES

1929 EDITION
The 54th Consecutive Annual Edition
(The Oldest Industrial Directory in the United States)
Corrected Up-to-Date
Ready for distribution Nov. 1st, 1928
Price $7.50

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Classified List of Pulp Mill Products
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Glazed and Coated Paper Manufacturers
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New York, N.Y., U.S.A.

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15 Broad St., New York

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Pittsburgh, Pa.

Fourdrinier Wires, all widths up to 300 inches

DIMOND WIRES

NEUMEYER & DIMOND
Established 1904
82-92 Beaver St. New York

Miscellaneous Markets

Office of the PAPER TRADE JOURNAL,
Wednesday, February 13, 1929.

BLANC FIXE.—Steadiness prevails in the blanc fixe market. Both the pulp and the powder continue in seasonal request. Prices remain unaltered. The pulp is quoted at from $42.50 to $45.00 per ton, in bulk, while the powder is selling at from 3¾ to 4½ cents per pound, in barrels, at works.

BLEACHING POWDER.—Conditions in the bleaching powder market are practically unchanged. Contract shipments are going forward at a normal pace. Prices are holding to schedule and shading is infrequent. Bleaching powder is quoted at from $2.00 to $2.35 per 100 pounds, in large drums, at works.

CASEIN.—Supplies of casein are moving into consumption at a good pace. Prices are firmer. Domestic casein is quoted at from 16½ cents to 17 cents per pound, while standard ground imported is selling at 16½ cents per pound and finely ground at 17 cents per pound, all in bags, car lot quantities.

CAUSTIC SODA.—Production of caustic soda is being maintained in sufficient volume to take care of current requirements. Prices remain unchanged. Solid caustic soda is quoted at from $2.90 to $2.95, while the flake and the ground are selling at from $3.30 to $3.35 per 100 pounds, in large drums, at works.

CHINA CLAY.—Most of the business transacted in the china clay market during the past week was along routine lines. Prices are unaltered. Imported china clay is quoted at from $15 to $25 per ton, ship side, while domestic paper making clay is still selling at from $8 to $13 per ton, at mine.

CHLORINE.—Trading in the chlorine market was moderately active. Shipments against contract were well up to average. Prices remain unchanged. Chlorine is quoted at 3 cents per pound, in tanks, or multi-unit cars, at works, on standard contracts. The spot quotation ranges from 3¼ to 3½ cents per pound.

ROSIN.—The rosin market continues to fluctuate. At the naval stores, the grades of gum rosin used in the paper mills are now quoted at from $9.25 to $9.40 per 280 pounds, ex dock, in barrels. Wood rosin is now selling at from $7.20 to $8.00 per 280 pounds, in barrels, at southern shipping points.

SALT CAKE.—Offerings of salt cake are rather limited and the market is exhibiting a strong undertone. Inquiries for future business are being received in good volume. Prices rule steady. Salt cake is quoted at from $16 to $18 per ton, while chrome salt cake is selling at from $14 to $15 per ton, in bulk, at works.

SODA ASH.—The soda ash market is in a sound position. Demand for this product is persistent. Prices are holding to previously recorded levels without difficulty. Contract quotations on soda ash, in car lots, at works, per 100 pounds, are as follows: in bags, $1.32½, and in barrels, $1.55.

STARCH.—Demand for starch was fairly satisfactory during the past week. Supplies are moving into consumption in normal volume. No further price changes have been reported. Special paper making starch is still quoted at $3.82 per 100 pounds, in bags, and at $3.99 per 100 pounds, in barrels, at works.

SULPHATE OF ALUMINA.—Some improvement was noticed in the sulphate of alumina market. Shipments against contract were fairly heavy. Prices remain unchanged. Commercial grades of sulphate of alumina are quoted at from $1.40 to $1.55 and iron free at from $1.95 to $2.05 per 100 pounds, in bags, at works.

SULPHUR.—The position of the sulphur market is practically unchanged. Prices are steady, Sulphur is still quoted at $18 per ton, at mine, in lots of 1,000 tons, or over, on yearly contracts, and at $20 per ton for any smaller quantity over that period. On spot and nearby car loads, the quotation is $20 per ton.

TALC.—Although the demand for talc of late has been light, the market is in a sound condition. Prices are holding to schedule and shading is infrequent. Domestic talc is quoted at from $16 to $18 per ton, at eastern mines, while imported talc is selling at from $18 to $20 per ton, ship side.

Market Quotations

Paper

(F. o. b. Mill)

Ledgers	11.00	@38.00
Bonds	9.00	@45.00
Writings—		
Extra Superfine	14.00	@32.00
Superfine	14.00	@32.00
Tub sized	10.00	@15.00
Engine sized	8.00	@11.00
News—		
Rolls, contract	Nominal	
Rolls, transient	Nominal	
Sheets	Nominal	
Side Runs	Nominal	
Book, Cased—		
S. & S. C.	6.00	@ 7.50
M. F.	5.75	@ 7.00
Coated and Enamel	7.50	@12.00
Lithograph	7.50	@12.00
Tissues—Per Ream—		
White No. 1	.75	@ 1.00
Anti-Tarnish	1.35	@ 1.90
Colored	1.00	@ 2.00
White No. 2	.75	@ .80
Kraft	1.00	@ 1.10
Manila	.75	@ .80
Kraft—		
No. 1 Domestic	6.25	@ 6.50
No. 2 Domestic	4.00	@ 4.25
Southern	3.75	@ 4.00
Imported	6.50	@ 7.00
Manila—		
No. 1 Jute	9.00	@ 9.25
No. 2 Jute	7.75	@ 8.50
No. 1 Wood	4.75	@ 5.25
No. 2 Wood	4.00	@ 4.50
Butchers	3.75	@ 4.25
Fibre Papers—		
No. 1 Fibre	5.00	@ 5.50
No. 2 Fibre	4.75	@ 5.25
Common Bogus	2.75	@ 3.00
Screenings	3.00	@ 3.25
Card Middles	4.00	@ 5.00
Glassine—		
Bleached, basis 25 lbs.	13.00	@16.00
Bleached, basis 20 lbs.	15.00	@16.00

(Delivered New York)

Boards—per ton—		
News	37.50	@45.00
Straw	52.50	@55.00
Chip	35.00	@42.50
Binders' Boards	65.00	@67.50
Sgl. Mla. Ll. Chip	47.50	@52.50
Wood Pulp	80.00	@85.00
Container	52.50	@55.00
85 Test Jute Liner	52.50	@55.00

Mechanical Pulp

(Ex-Dock)

No. 1 Imported—		
Moist	28.00	@31.25
Dry	32.00	@34.00

(F. o. b. Mill)

No. 1 Domestic	26.00	@29.00
Screenings	15.00	@20.00

Chemical Pulp

(Ex-Dock, Atlantic Ports)

Sulphite (Imported)—		
Bleached	3.65	@ 4.40
Easy Bleaching	2.75	@ 2.90
No. 1 strong unbleached	2.50	@ 2.80
Mitscherlich unbleached	2.55	@ 3.25
No. 2 strong unbleached	2.40	@ 2.50
No. 1 Kraft	2.50	@ 2.75
No. 2 Kraft	2.40	@ 2.50
Sulphate—		
Bleached	3.75	@ 3.85

(F. o. b. Pulp Mill)

Sulphite (Domestic)—		
Bleached	3.40	@ 4.75
Easy Bleaching Sulphite	2.60	@ 2.75
News Sulphite	2.40	@ 2.50
Mitscherlich	3.00	@ 3.25
Kraft (Domestic)	2.50	@ 3.30
Soda Bleached	3.15	@ 3.30
Sulphate Screenings—		
Coarse	.75	@ .95
Refined	1.50	@ 1.65

Domestic Rags

New Rags

(Prices to Mill f. o. b. N. Y.)

Shirt Cuttings—		
New White, No. 1	11.00	@11.50
New White, No. 2	8.00	@ 8.50
Silesias No. 1	7 25	@ 7.75
New Unbleached	11.00	@11.50
Washables	4.25	@ 4.7-
Fancy	5.50	@ 6.00
Blue Overall	6.75	@ 7.25
New Blue Prints	5.25	@ 5.50
New Soft Blacks	5.25	@ 5.75
Mixed Khaki Cuttings	4.75	@ 5.21
Pink Corset Cuttings	8.00	@ 8.50
O. D. Khaki Cuttings	5.25	@ 5.71
Men's Corduroy	3.75	@ 4.21
New Mixed Blacks	3.50	@ 3.71

Old Rags

White, No. 1—		
Repacked	5.50	@ 6.00
Miscellaneous	4.50	@ 5.00
White, No. 2—		
Repacked	3.00	@ 3.50
Miscellaneous	2.50	@ 2.75
St. Soiled, White	2.00	@ 2.15
Thirds and Blues—		
Repacked	2.25	@ 2.50
Miscellaneous	1.75	@ 2.00
Black Stockings	3.25	@ 3.75
Roofing Rags—		
Cloth Strippings	1.70	@ 1.80
No. 1	1.70	@ 1.80
No. 2	1.55	@ 1.65
No. 3	1.30	@ 1.40
No. 4	1.25	@ 1.35
No. 5A	.95	@ 1.05

Foreign Rags

New Rags

New White Cuttings	10.50	@11.50
Unbleached Cuttings	10.00	@11.00
Light Flannelettes	7.50	@ 8.00
New Light Silesias	7.00	@ 7.50
New Light Oxfords	7.00	@ 7.50
New Light Prints	5.50	@ 6.50
New Mixed Cuttings	2.75	@ 3.25
New Dark Cuttings	2.50	@ 3.00

Old Rags

No. 1 White Linens	7.25	@ 8.00
No. 2 White Linens	5.50	@ 6.25
No. 3 White Linens	4.50	@ 5.00
No. 4 White Linens	3.00	@ 3.50
No. 1 White Cotton	5.50	@ 6.50
No. 2 White Cotton	4.50	@ 5.50
No. 3 White Cotton	3.00	@ 4.00
No. 4 White Cotton	1.90	@ 2.15
Extra Light Prints	2.75	@ 3.25
Ord. Light Prints	2.25	@ 2.50
Med. Light Prints	1.90	@ 2.10
Dutch Blue Cottons	2.15	@ 2.30
French Blue Linens	2.65	@ 2.75
French Blue Cottons	2.10	@ 2.25
German Blue Linens	2.35	@ 2.55
German Blue Cottons	2.10	@ 2.20
Checks and Blues	1.80	@ 1.90
Lindsay Garments	1.80	@ 1.85
Dark Cottons	1.60	@ 1.65
Old Shopperies	1.50	@ 1.55
New Shopperies	1.50	@ 1.60

Old Rope and Bagging

(Prices to Mill f. o. b. N. Y.)

Gunny No. 1—		
Foreign	1.60	@ 1.70
Domestic	1.70	@ 1.75
Wool Tares, light	1.60	@ 1.65
Wool Tares, heavy	1.60	@ 1.70
Bright Bagging	1.60	@ 1.65
Small Mixed Rope	1.25	@ 1.40
Manila Rope—		
Foreign	3.35	@ 3.65
Domestic	3.25	@ 4.00
New Burlap Cut	2.75	@ 3.00
Hessian Jute Threads—		
Foreign	3.50	@ 4.00
Domestic	3.25	@ 3.50

Old Waste Papers

(F. o. b. New York)

Shavings—		
Hard, white, No. 1	3.25	@ 3.50
Hard, white, No. 2	2.40	@ 2.55
Soft, White, No. 1	2.50	@ 2.60
White envelope cuttings	3.25	@ 3.50
Flat Stock—		
Stitchless	1.70	@ 1.80
Overissue Mag.	1.70	@ 1.80
Solid Flat Book	1.65	@ 1.75
Crumpled No. 1	1.15	@ 1.25
Solid Book Ledger	2.00	@ 2.10
Ledger Stock	1.70	@ 1.80
New B. B. Chips	.65	@ .75
New Env. Cut	2.40	@ 2.60
Manilas—		
New Cuttings	1.60	@ 1.85
Extra No. 1 old	1.25	@ 1.35
Print	.75	@ .80
Container	.60	@ .65
Bogus Wrapper	.75	@ .85
Old Kraft Machine Compressed bales	1.75	@ 1.85
News—		
No. 1 White News	1.70	@ 1.75
Strictly Overissue	.85	@ .95
Strictly Folded	.65	@ .70
No. 1 Mixed Paper	.45	@ .50
Common Paper	.30	@ .35

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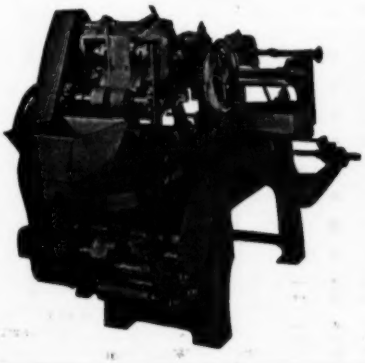

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Twines

(F. o. b. Mill)

Cotton—			
No. 1	.39	@	.40
No. 2	.37	@	.38
No. 3	.36	@	.37
B. C., 18 basis	.38	@	.40
A. B. Italian, 18 basis	.48	@	.53
Finished Jute—			
Dark 18 basis	.24	@	.25
Light 18 basis	.27	@	.28
Jute Wrapping, 3-6 Ply—			
No. 1	.19	@	.21
No. 2	.18	@	.20
Tube Rope—			
4-ply and larger	.16	@	.17
Fine Tube Yarn—			
5-ply and larger	.21	@	.23
4-ply	.25	@	.29
3-ply	.28	@	.32
Unfinished Indis—			
Basis	.13	@	.14
Paper Makers Twine			
Balls	.11	@	.12
Box Twine, 2-3 ply	.15	@	.17
Jute Rope	.17	@	.19
Ameri. Hemp, 6	.29	@	.31
Sisal Hay Rope—			
No. 1 Basis	.16	@	.18
No. 2 Basis	.14	@	.16
Sisal Lath Yarn—			
No. 1	.14	@	.16
No. 2	.12	@	.14
Manila Rope	.22	@	.24

CHICAGO

All Rag Bond	.33	@	.41
No. 1 Rag Bond	.25	@	.35
No. 2 Rag Bond	.14	@	.25
Water Marked Sulphite Bond	.09	@	.12
Sulphite Bond	.06¼	@	.11
Superfine writing	.18	@	.24
No. 1 fine writing	.14	@	.18
No. 2 fine writing	.12	@	.14
No. 3 fine writing	.08½	@	.12
No. 1 M. F. Book	.06½	@	.07¼
No. 2 M. F. Book	.05¼	@	.06¼
No. 1 S.&S.C. Book	.06¼	@	.07¼
No. 2 S.&S.C. Book	.05¼	@	.06½
Coated Book	.07½	@	.12
Coated Label	.07½	@	.10
News—Roll, mill	.03½	@	.04¼
News—Sheets, mill	.03¼	@	.04¼
No. 1 Manila	.04¼	@	.05¼
No. 1 Vibre	.04¼	@	.05¼
No. 2 Manila	.04¼	@	.04¾
Butcher's Manila	.04	@	.04½
No. 1 Kraft	.06¼	@	.06½
Southern Kraft	.03¾	@	.04
No. 2 Kraft	.04	@	.04¼
Wood Pag Boards	.04¼	@	.06¼
Sulphite Screenings	.03	@	.03¼
Manila Tissue—			
24x36 Sheet	.07	@	.07¼
White Tissue—			
20x30 Sheet	.07¼	@	.07½
Boards, per ton—			
(Delivered Central Territory)			
Plain Chip	37.50	@	41.00
Solid News	47.50	@	—
Manila Lined Chip	55.00	@	—
Container Lined—			
(Delivered Central Territory)			
85 Test	65.00	@	70.00
100 Test	70.00	@	—

Old Papers

(F. o. b. Chicago)

Shavings—			
No. 1 Hard White	2.35	@	2.45
White Env. Cuttings	2.50	@	2.55
No. 1 Soft Shavings	2.10	@	2.15
No. 1 Mixed	1.00	@	1.05
No. 2 Mixed	.80	@	.85
Ledger & Writings	1.55	@	1.65
Solid Books	1.40	@	1.50
Blanks	1.50	@	1.65
Krafts	1.70	@	2.00
New Kraft Cuts	2.30	@	2.35
Manila Envelope Cuttings	1.75	@	1.90
Ex. No. 1 Manila	1.40	@	1.50
Print Manila	.85	@	.90
Folded News (overissue)	.70	@	.80
Old Newspapers—			
No. 1	.75	@	.80
No. 2	.65	@	.70
Mixed Papers—			
No. 1	.65	@	.70
Roofing Stocks—			
(F. o. b. Chicago, net cash)			
No. 1	30.00	@	—
No. 2	28.00	@	—

PHILADELPHIA

Paper

(F. o. b. Mill)

Bonds	.06	@	.40
Ledgers	.10	@	.40
Writings—			
Superfine	.13	@	.18
Extra fine	.20	@	.22
Fine	.18	@	.26½
Fine, No. 2	.15	@	.25
Fine, No. 3	.10	@	.20
Book, M. F.	.06	@	.07
Book, S. S. & C.	.06	@	.07½
Book, Coated	.10	@	.16
Coated Lithograph	.07	@	.11
Label	.07	@	.11
News	.03½	@	.04
No. 1 Jute Manila	.08½	@	.09
Manila Sul., No. 1	.04½	@	.05½
Manila No. 2	.03¾	@	.04
No. 2 Kraft	.06	@	.06½
No. 1 Kraft	.06½	@	.07
Common Bogus	.03	@	.03½
Straw Board	52.50	@	75.00
News Board	35.00	@	38.00
Chip Board	30.00	@	38.00
Wood Pulp Board	85.00	@	95.00
(Carload Lots)			
Binder Boards—			
No. 1, per ton	75.00		
No. 2, per ton	70.00		
Carload lots	68.00	@	70.00
Tarred Felts—			
Regular	53.00	@	55.00
Slaters (per roll)	84	@	90
Best Tarred, 1-ply (per roll)	1.85	@	1.93
Best Tarred, 2-ply (per roll)	1.44	@	1.54
Best Tarred, 3-ply	1.93	@	2.08

Domestic Rags (New)

(Price to Mill, f. o. b. Phila.)

Shirt Cuttings—			
New White, No. 1	10½	@	11
New White, No. 2	.07	@	.07½
Light Silesias	.07	@	.07½
Silesias, No. 1	.08½	@	.09
Black Sil. ia, soft	.05	@	.05½
New Unbleached	.10½	@	.11
Washable, No. 1	.04½	@	.05
Blue Overall	.07½	@	.08
Fancy			
Cottons—According to grades—			
Washable, No. 2	.03	@	—
New Blue	.03	@	.03½
New Black Soft	.05	@	.05¾
New Light Seconds	.02½	@	.03
New Dark Seconds	1.85	@	2.00
Khaki Cuttings—			
No. 1 O. D.	.05½	@	.05¾
No. 2 Mixed	.04½	@	.04¾
Corduroy	.03	@	.03½
New Canvas	.08½	@	.09
New Black Mixed	.03¼	@	.04½

Bagging

(F. o. b. Phila.)

Gunny, No. 1—			
Foreign	1.50	@	1.60
Domestic	1.75	@	—
Manila Rope	3.50	@	4.00
Sisal Rope	1.50	@	—
Mixed Rope	1.10	@	1.25
Scrap Burlaps—			
No. 1	1.50	@	1.60
No. 2	1.10	@	1.20
Wool Tares, heavy	3.00	@	—
Mixed Strings	1.15	@	1.25
No. 1, New Light Burlap	2.50	@	2.75
New Burlap Cuttings	2.00	@	2.25

Old Papers

(F. o. b. Phila.)

Shavings—			
No. 1 Hard White	3.20	@	3.25
No. 2 Hard White	2.75	@	3.00
No. 1 Soft White	2.50	@	2.60
No. 2 Soft White	1.90	@	2.00
No. 1 Mixed	1.50	@	1.60
No. 2 Mixed	.90	@	1.00
Solid Ledger Stock	1.85	@	1.90
Writing Paper	1.60	@	1.65
No. 1 Books, heavy	1.45	@	1.55
No. 2 Books, light	1.20	@	1.25
No. 1 New Manila	2.40	@	2.50
No. 1 Old Manila	1.50	@	1.60
Print Manila	.95	@	1.00
Container Manila	.85	@	.90
Old Kraft	2.25	@	2.30
Common Paper	.55	@	.60
No. 1 Mixed Paper	.70	@	.75
Straw Board, Chip	.70	@	.75
Binders Board, Chip	.70	@	.75
Overissue News	.85	@	.90
Old Newspaper	.70	@	—

Domestic Rags (Old)

White, No. 1—			
Repacked	4.25	@	4.50
Miscellaneous	3.50	@	3.75
White, No. 2—			
Thirds and Blues—			
Repacked	2.00	@	2.25
Miscellaneous	1.60	@	1.80
Black Stockings (Export)	3.90	@	4.25
Rooting Stock—			
Foreign No. 1	1.65	@	1.75
Repacked	.02½	@	.02¾
No. 2	1.30	@	1.35
No. 3 (Roofing)	1.15	@	1.25
No. 4	1.00	@	1.15
No. 5A	.75	@	.85
B	.65	@	.75
C	.65	@	.75

BOSTON

Paper

(F. o. b. Mill)

Ledgers—			
Sulphite	.07½	@	.13
Rag content	.15	@	.30
All rag	.38	@	.52½
Bonds—			
Sulphite	.06½	@	.11½
Rag content	.15	@	.30
All rag	.36½	@	.65
Writings	.07	@	.20
Superfines	.11	@	.31
News	.03½	@	.04
Book, Super	.06	@	.09
Book, M. F.	.05¾	@	.08½
Book, Coated	.08½	@	.20
Coated Litho	.09	@	.12
Label	.09½	@	.15
Jute Manila No. 1	.11	@	.13
Manila, Sul. No. 1	.04¾	@	.06½
Manila, Sul. No. 2	.03¾	@	.04½
No. 1 Kraft	.05½	@	.06½
No. 2 Kraft	.03¾	@	.04½
Common Bogus	.02	@	.02¾
Delivered New England points			
Straw Boards, rolls .009			52.50
Straw Board in Sheets, basis 35s to 70s	54.50	@	55.00
Filled News Board	37.50	@	40.00
Chip Board	35.00	@	37.50
Single Manila Lined Chip	47.50	@	50.00
Single White, Patent Coated Newsboard			
Bender	67.50	@	80.00
Wood Pulp Board	80.00	@	85.00
Binder Boards	70.00	@	75.00
(F. o. b. Mill)			
Tarred Felts—			
Regular, carload lots	65.00	@	—

Old Papers

(F. o. b. Boston)

Shavings—			
No. 1 Hard White	3.25	@	3.75
No. 2 Hard White	2.60	@	2.90
No. 1 Soft White	2.50	@	2.60
No. 1 Mixed	1.10	@	1.15
No. 2 Mixed	.85	@	.90
Solid Ledger Stock	2.35	@	2.45
No. 1 Books, Heavy	1.50	@	1.60
No. 1 Books, Light	—	@	1.15
Manila Env Cuttings	2.00	@	2.25
No. 1 Old Manila	1.15	@	1.20
White Blank News	1.60	@	1.65
Old Kraft	1.85	@	1.90
Print Manila	.80	@	.90
No. 1 Mixed Paper	—	@	.50
Overissue News	.70	@	.85
Old Newspapers	.65	@	.67½
Box Board, Chip	.55	@	.60

Bagging

(F. o. b. Boston)

Gunny No. 1—			
Foreign	—	@	1.60
Manila Rope—			
Foreign	1.60	@	1.50
Domestic	4.00	@	—
Mixed Strings	.90	@	1.00
Jute Wool Strings	—	@	1.00
Scrap Burlaps	1.25	@	1.35
Scrap Sisal	1.60	@	1.80
Scrap Sisal for shredding	1.75	@	2.00
Wool Tares, heavy	—	@	1.50
New Burlap Cutting	1.90	@	2.00
Australian Wool Pouches	2.75	@	3.00

Domestic Rags (New)

(F. o. b. Boston)

Shirt Cuttings—			
New White No. 1	.09½	@	.10
Silesias No. 1	.08	@	.09
New Unbleached	.11	@	.11½
Fancy	.06	@	.06½
Washable	.04	@	.05
Cottons—According to grades			
Blue Overalls	.07¾	@	—
New Black, soft	.04	@	.04¾
Khaki Cuttings	.04	@	.04½
O. D. Khaki	.05½	@	.05¾
Corduroy	.03	@	.03½
New Canvas	.08	@	.08¾

Domestic Rags (Old)

(F. o. b. Boston)

Canvas	04½	@	—
White No. 1—			
Repacked	4.75	@	5.25
Miscellaneous	3.00	@	—
White No. 2—			
Repacked	04½	@	05
Miscellaneous	2.75	@	3.00
Twos and Blues	2.75	@	2.90
Thirds and Blues			
Repacked	2.75	@	2.90
Miscellaneous	2.50	@	—
Roofing Stock—			
No. 1	1.65	@	1.75
No. 2	1.45	@	1.55
No. 3	1.05	@	1.10
No. 4	1.10	@	1.15

Foreign Rags

(F. o. b. Boston)

Dark Cottons	—	@	1.55
New No. 1 Shirt Cuttings	9.00	@	10.00
Dutch Blues	2.00	@	2.12½
Lace Curtains	5.10	@	5.50
New Checks & Blues	4.25	@	4.50
Old Fustians	1.90	@	—
Old Linsey Garments	1.80	@	1.85

TORONTO

Paper

(F. o. b. Mill)

Bond—			
No. 1 Sulphite	.12½	@	—
No. 2 Sulphite	.10¼	@	—
No. 1 Colored	.13½	@	—
No. 2 Colored	.11¼	@	—
Ledgers (suiphite)	—	@	—
Ledgers, No. 1	.36	@	—
Ledgers, No. 2	.27	@	—
Writing	09½	@	10
News f. o. b. Mills—			
Rolls (carloads)	3.25	@	—
Sheets (carloads)	3.75	@	—
Sheets (2 tons or over)	4.00	@	—
Book—			
No. 1 M. F. (carloads)	7.50	@	—
No. 2 M. F. (carloads)	7.25	@	—
No. 3 M. F. (carloads)	7.00	@	—
No. 1 S. C. (carloads)	8.00	@	—
No. 2 S. C. (carloads)	7.75	@	—
No. 3 S. C. (carloads)	7.50	@	—
No. 1 Coated and Litho	13.25	@	—
No. 2 Coated and Litho	12.25	@	—
No. 3 Coated and Litho	11.50	@	—
Coated tinted	14.50	@	—
Wrapping—			
Rag Brown	4.95	@	—
White Wrap	5.25	@	—
"B" Manila	5.80	@	—
No. 1 Manila	6.65	@	—
Fiber	6.65	@	—
Kraft, M. F.	7.00	@	—
M. G.	7.00	@	—

Pulp

(F. o. b. Mill)

Ground Wood	30.00	@	31.00
Sulphite easy bleaching	62.00	@	—
Sulphite news grade	62.00	@	—
Sulphite, bleached	75.00	@	—
Sulphate	65.00	@	—

Old Waste Paper

(In carload lots, f. o. b. Toronto)

Shavings—			
White Env. Cut	3.00	@	—
Soft White Book Shavings	2.85	@	—
White Blk. News	1.60	@	—
Book and Ledger—			
Flat Magazine and Book Stock (old)	1.40	@	—
Light and Crumpled Book Stock	1.25	@	—
Ledgers and Writings	1.50	@	—
Solid Ledgers	1.50	@	—
Manilas—			
New Manila Cut	1.50	@	—
Printed Manilas	1.00	@	—
Kraft	2.25	@	—
News and Scrap—			
Strictly Overissue	80	@	—
Strictly Folded	80	@	—
No. 1 Mixed Paper	.70	@	—

Domestic Rags

(Price to mills, f. o. b. Toronto)

No. 1 White Shirt Cuttings	11½	@	—
Fancy Shirt Cuttings	.05¼	@	—

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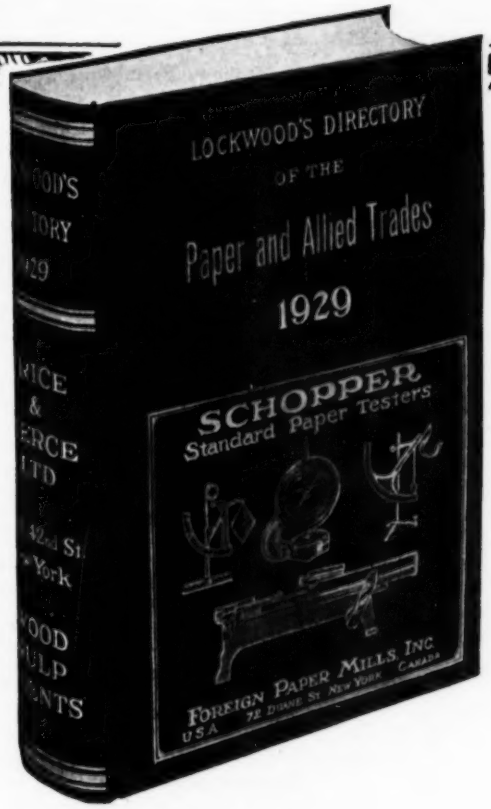
1929 *Edition*



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Classified List of Pulp Mill Products
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Paper Mill Stocks and Bonds

Quoted by Taylor & White, 45 Wall street, New York City, to whom all inquiry for quotations on these or any other Securities is referred.

BONDS	BID	ASKED
Abitibi Power & Paper 5s, 1943	90	91
Abitibi Power & Paper 6s, serially to 1934	100	102
American Writing Paper 6s, 1947	81	87
Bastrop Pulp & Paper 6½s, 1940	103	105½
Bedford Pulp & Paper 6½s, 1942	97	100
Beigo-Canadian Paper 6s, 1943	100	103
British-Columbia Pulp & Paper 6s, 1950	89	92
Brown Paper Mills Serial 6s, 1941	97	100
Brown Company 5½s, 1946	98	101
Bryant Paper 6s, 1942	98	101½
Canadian Paper Board 7s, 19337	97	99½
Cape Breton Pulp & Paper 6s, 1932	103	...
Celotex Company 6s, 1929	95	99
Celotex Company 6½s, 1939	100	102
Celotex Company of Chicago, Debenture 6s, 1936	95	98
Central Paper Company Serial 6½s, 1942	86	89
Central Paper 7s, 1934	78	...
Champion Coated Paper Serial 6½s, 1934	100	...
Champion Coated Fibre Notes 6s, 1941	100	102
Champion Fibre Notes 6s, 1941	100	102
Champion Fibre Notes 8s, 1930	95	...
Champion Paper Corp. 6s, 1945	95	98
Container Corp. of America Debenture 6s, 1936, ex-warrants	101	104
Continental Paper Products 6½s, 1943	90	99
Cornell Wood Products 7½s, 1937	103	...
Crown Willamette 6s, 1951	101	102
Dells Paper & Pulp Serial 6s, 1938	95	98
Dixon Board Mills Serial 6s, 1942	80	...
Donnaconna Paper 5½s, 1948	93	...
Eastern Manufacturing Co. 7s, 1938	97	100
Escanaba Paper Serial 6s, 1939	98	100
Escanaba Paper 6½s, 1935	96	99
Filer Fibre Serial 7s, 1935	90	95
Fort Irange Paper 7s, 1942	101	...
Fort William Paper 6s, 1946	100	104
Fraser Company 6s, 1950	103	105
Hammermill Paper Serial 6s, 1939	100	...
Hawley Pulp & Lumber 6s, 1946	96	...
Hawthorne Paper Company 6s, 1937	80	...
Hoberg Paper & Fibre 7s, 1937	94	97
Industrial Fibre Corp. Debenture 8s, 1933	100	...
Itasca Paper & Prairie River Power Serial 5½s, 1938	99½	...
Itasca Paper & Prairie River Power Serial 6s, 1938	99	...
Jessup & Moore First 6s, 1945	83	90
Kalamazoo Vegetable Parchment 6s, 1938	99	101
Lake Superior Paper 6s, 1941	105	108
Marathon Paper Mills Serial 5½s, 1942	99	101
Marinette & Menominee 7½s, 1936	103	105
Mead Pulp & Paper 5% Notes Serially, 1937	95	100
Mead Fibre 7s, 1937	97	101
Minnesota Ontario Paper Serial 6s, 1945	97½	100
Murray Bay Paper Serial 6½s, 1947	102	105
Munissing Paper Serial 6s, 1936	98	...
Nekoosa Edwards Paper 6s, 1928-42	96	...
Ontario Pulp & Paper 6s, 1931	108½	110½
Orono Pulp & Paper 6s, 1943	99	...
Orono Pulp & Paper 5s, 1941	96½	...
Oswego Falls Corp. 6s, 1941	99	102
Parker-Young Company 6½s, 1944	98	100
Paterson Parchment Paper 6s, 1938	101	103
Penobscot Chemical Fibre 6s, 1942	102	105
Port Alfred Pulp & Paper 5½s, 1947	98	100
Price Brothers 6s, 1943	105	...
Provincial Paper 5½s, 1947	98½	...
Queen City Paper 7s, 1933	98	...
River Raisin Paper 6s, 1936	98	100
Riordan Pulp & Paper 6s, 1942	102	104
Rolland Paper 6s, 1937	99	101
St. Croix Paper Serial 5s, 1937	99	...
St. Helen Pulp & Paper 6½s, 1931	99	102
St. Maurice Valley Corp. 6s, 1945	101	104
St. Maurice Valley Corp. 5½s, 1947	98½	100½
St. Regis Paper of Canada 6s, 1931	100	101½
St. Regis Paper of Canada 6½s, 1934	100	102
Smith (Howard) Paper Mills 7s, 1941	104	106
Spanish River Pulp & Paper 6s, 1931	108	110
Stevens-Thompson Paper 6s, 1942	94	96
Taggart Brothers 6s, 1944	95	100
Tait Paper & Color Industries 6s, 1934	88	92
Ticonderoga Pulp & Paper 5s, 1930	94	...
Ticonderoga Pulp & Paper 6s, 1940	100	102
Tomahawk Kraft Paper 6s, 1938	98	...
Tomahawk Pulp Paper 7s, 1932	99	...
Tonawanda Paper 5½s, Series 1941	99	102
Union Bag & Paper Power 6s, 1932	98	100
United Wall Paper Factories 6s, 1947	96	99
Warren (S. D.) Company 6s, 1945	103	105
Watab Paper 6½s, 1942	102	...
Waterway Paper Products 6s, 1931	100	101½
Wayagamack Pulp & Paper 6s, 1951	103	105
Westfield River Paper Serial 7s, 1943	89	93
Whitmer-Parson Pulp & Lumber 8s, 1938	20	25
Whitaker Paper 7s, 1942	108	110

STOCKS	BID	ASKED
American Box Board, Pfd.	9¼	10¼
American Box Board, Com.	9¼	10¼
Am. Tissue Mills, 7% Pfd.	90	93
British Columbia P. & P. Pfd.	65	75
Brompton Pulp & Paper, 8% Pfd.	100	...
Champion Fibre, 7% Pfd.	108	110
Diem & Wing, 7% Pfd.	92	97
Eastern Mfg. Co. 1st Pfd.	55	...
Great Northern Paper, Com.	75	78
Hammermill Paper, new 6% Pfd.	100	...
Hinde & Dauch, Com.	125	None Off
Hinde & Dauch, 6% Pfd.	102	None Off
Holyoke Card & Paper	160	None Off
Marathon Paper Mills, Com.	150	...
Mengel Co., Pfd.	102	104
Midwest Box Co., 8% Pfd.	98	102
Midwest Box Co., 6% Pfd.	95	99
Louis De Jonge Co., 7% Pfd.	94	97
Oxford Papers, Com.	195	...
Oxford Paper Co., Pfd.	108	111
Penobscot Chemical Fibre, Com.	80	...
Richardson Co., Com.	170	...
Sabin Robbins Paper Co., 8% Pfd.	105	110
St. Croix Paper	155	...
St. Regis Paper Co., 7% Cum. Pfd.	105	108
Westfield River Paper Co., 1st Pfd.	Wanted	None Off
West Virginia Pulp and Paper Company	55	57
West Virginia Pulp and Paper, Pfd.	100	103
Whittaker Paper, 7% Cum. Pfd.	105	None Off

NEWS PRINT PRICES STILL DELAYED

(*Continued from page 23*)

eration November, and according to present plans, the third production unit will be added to the mill in 1930.

Two More Machines Begin Operations

The two new news print machines of the St. Lawrence Paper Mills at Three Rivers are starting to be under process of being tuned up for production, and in the course of the next month or so are expected to be producing their full rated capacity of 75 tons a day, increasing the capacity from 300 to 450 tons a day.

Clyde and Sissiboo Pulp Co.

A meeting of the bond holders of the Clyde and Sissiboo Pulp Company has been called for February 15, to give the bond holders' committee full power to sell the undertaking. If no private sale is made before April 15 this year, it is proposed to sell the concern by public auction, without any reserve. The plant consists of a groundwood mill on the Clyde River in Nova Scotia, with a daily capacity of 27,000 (dry) lbs. per 24 hours.

International Plans Mill in Maine

An echo of the enterprise of the International Paper Company in New Brunswick is heard from the Legislature of the State of Maine in a measure introduced there called the Fish River Bill.

It is said, providing the Maine Legislature will grant a charter to the Fish River Power and Storage Company, a subsidiary of International Paper Company, that the company will spend a sum around $2,000,000 to be used partly in building a paper mill at Van Buren, Maine, with a pulp mill on the Canadian side of the Saint John River, at St. Leonards, whence the pulp would be piped across to the Van Buren plant and there manufactured. The output of the Van Buren Mill it is said would be 40,000 tons of high grade paper annually.

Two years ago a bill similar to that now before the Maine Legislature failed to pass involving as it does the matter of storage rights., etc. The subsidiary company's headquarters is given as at Fort Kent, Maine, the proposed articles of incorporation being $2,000,000.

The chief point of interest at the present time is as to the attitude of the Legislature in Maine as, unless the measure is passed, it seems unlikely that this part of the International Company's program will be proceeded with.

Paper Mill Employment

There was a decrease in employment in both paper and pulp mills and in the paper box industry in December compared with November according to the Bureau of Labor Statistics of the Department of Labor.

Reports were received by the Bureau from 211 paper and pulp mills which gave their November employment at 56,600 decreasing in December to 55,762 a decrease of 1.5 per cent. The payrolls in these mills on the other hand showed an increase of less than one tenth of one per cent or from $1,529,285 in November to $1,529,399 in December.

The Bureau also received reports from 182 paper box factories which gave their November employment at 20,902 decreasing in December to 20,144 a decrease of 3.6 per cent. The payrolls in these plants also decreased from $486,372 in November to $462,167 in December a decrease of 5 per cent.

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ESTABLISHED 1872

THE INTERNATIONAL WEEKLY OF THE PAPER AND PULP INDUSTRY AND THE PIONEER PUBLICATION IN ITS FIELD

FIFTY-SEVENTH YEAR

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